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A COMPILATION OF MOORED CURRENT DATA AND ASSOCIATED OCEANOGRAPH--ETC(U)

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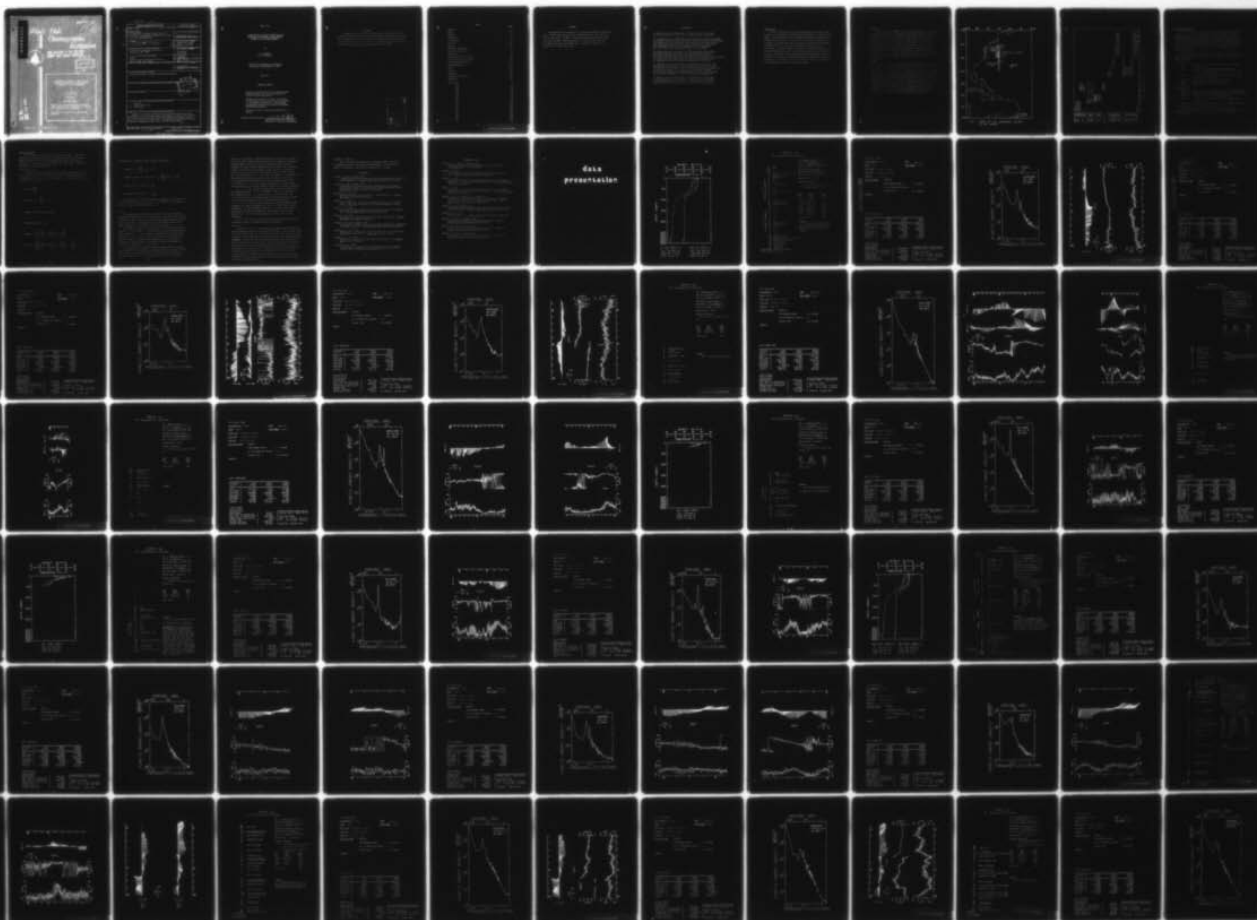
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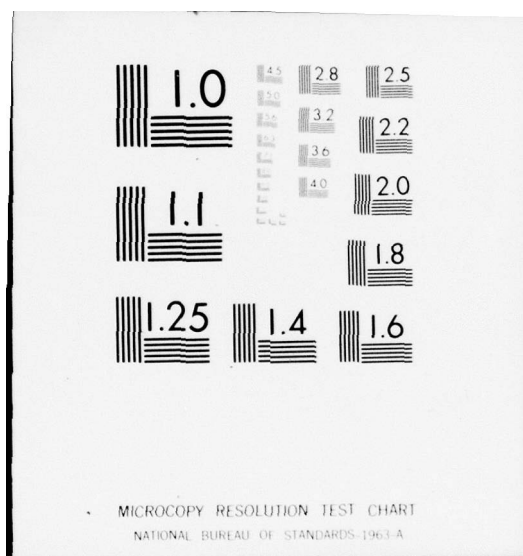
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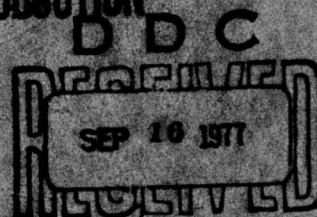
*Oceanographic  
Institution*

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A COMPILATION OF MOORED CURRENT DATA AND  
ASSOCIATED OCEANOGRAPHIC OBSERVATIONS,  
VOLUME XIII (1970 MEASUREMENTS)

by

S. A. Tarbell  
A. W. Whitlatch

June 1977

TECHNICAL REPORT

*Prepared for the Office of Naval Research  
under Contracts N00014-66-C-0241; NR 083-004  
and N00014-76-C-0197; NR 083-400.*

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WOODS HOLE OCEANOGRAPHIC INSTITUTION  
Woods Hole, Massachusetts 02543

June 1977

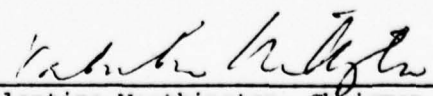
TECHNICAL REPORT

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Valentine Worthington, Chairman  
Department of Physical Oceanography



# ABSTRACT

Summaries of moored current meter and associated hydrostation data collected in 1970 by the Woods Hole Oceanographic Institution are presented. The averaged current data are presented as Statistics, Spectral Diagrams, Vector and Scalar Plots versus Time. The associated hydrostation data are presented as temperature and salinity plotted versus depth.

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## PREFACE

This volume is the thirteenth of a series of Data Reports presenting moored current meter and associated oceanographic data collected by the W.H.O.I. Buoy Group. Volumes I through XII present data from the years 1963-1969, and three array experiments: the 1970 Pollard array, the 1973 IWEX array and the 1973 MODE array. Volume XIII completes the presentation of 1970 current data.

## RECOGNITION

*In working toward our common cause, we faithful labor without pause  
To fix the meters, splice the line, to reduce data in record time.*

Our instrument section stands alone; we have the best right here at home.  
Our skilled technicians twist and probe to maintain accurate time and strobe.  
They modify where they think best, then send to sea for a working test.  
The releases too receive much care for we depend on them down there.  
Each instrument has a job to do towards the goal we all pursue,  
And if each works well to the end the data is our dividend.

Our mooring guys pass every test; for they are always at their best,  
With mooring wuzzles that come in, or shackles and a cotter pin.  
The recovery and deployment too of moorings gives all much to do.  
From Loran fixes which say "We're near" and releases beeping "I'm still here",  
To a rotor spin at a certain time and hooking on the mooring line,  
To hydrostations and all the rest of oceanography at its best.

Our data section is hard to beat; the scientists keep us on our feet,  
As they dwell on every type of plot and argue this, or that, or not.  
They give us plenty of work to do, computing and drafting and typing too,  
To record our data for all to see and to indicate its integrity.  
We've tried to present in our displays data in several different ways,  
For those whose interest it is to see data from the changing sea.

*In working toward our common cause we faithful labor without pause  
To fix the meters, splice the line, to reduce data in record time.  
And all these things we do with glee, courtesy O.N.R., so that we  
Can process and plot, produce and plan to benefit our fellow man.*

### Introduction

The long term objectives of the Moored Array Project (Buoy Group) at W.H.O.I. are to measure and describe the distribution of energy in the ocean. In 1970 the effort was to determine the spatial structure of the velocity field at Site D ( $39^{\circ} 10.0'N$ ,  $70^{\circ} 00.0'W$ ) and to examine the structure of currents under the Gulf Stream. The current data gathered throughout 1970 to measure these parameters are presented in two data reports. An earlier report, Volume VIII (Pollard and Tarbell, 1975) presents eighteen data series from a three mooring array set near Site D in 1970 to investigate the horizontal and vertical structure of the top 100 meters of the ocean. Volume XIII presents an additional thirty-six records set in six locations in the western North Atlantic and completes the presentation of good 1970 current meter data.



### Moorings

A mooring report (Volkman, 1973) contains diagrams of moorings set by the Buoy Group in 1970. Diagrams of twenty-two moorings associated with the presented data are included in this report. Four of these moorings are the new 'Intermediate' moorings which were designed to permit current measurements below the lower edge of the fish bite zone without contamination from surface motion (Heinmiller, 1976). Twelve are 'Bottom' moorings designed to collect data within a few hundred meters of the bottom. Three of the moorings are 'Subsurface' moorings and two are 'Surface' moorings. Both types have their principal flotation at the top of the mooring and are capable of measuring throughout the water column.

### Arrays

Improvements in both mooring design and current meter reliability made feasible several array experiments in 1970. There was an array at Site D (39° 10'N, 70° 00'W) in July 1970 which is presented in a separate report (Pollard and Tarbell, 1975). The array areas for this report are shown in Figure 1 and the data duration with respect to depth and time is shown in Figure 2. Data from a two mooring array set as part of the Caribbean Inflow Study are discussed in Stalcup and Metcalf (1972). The Slope and Gulf Stream arrays collected near-bottom data which was used in Schmitz (1974) and Schmitz (1976). The latter paper is a general discussion of data from the western North Atlantic and includes data from Site L (30°N, 70°W) and the North/South array along 70°W.

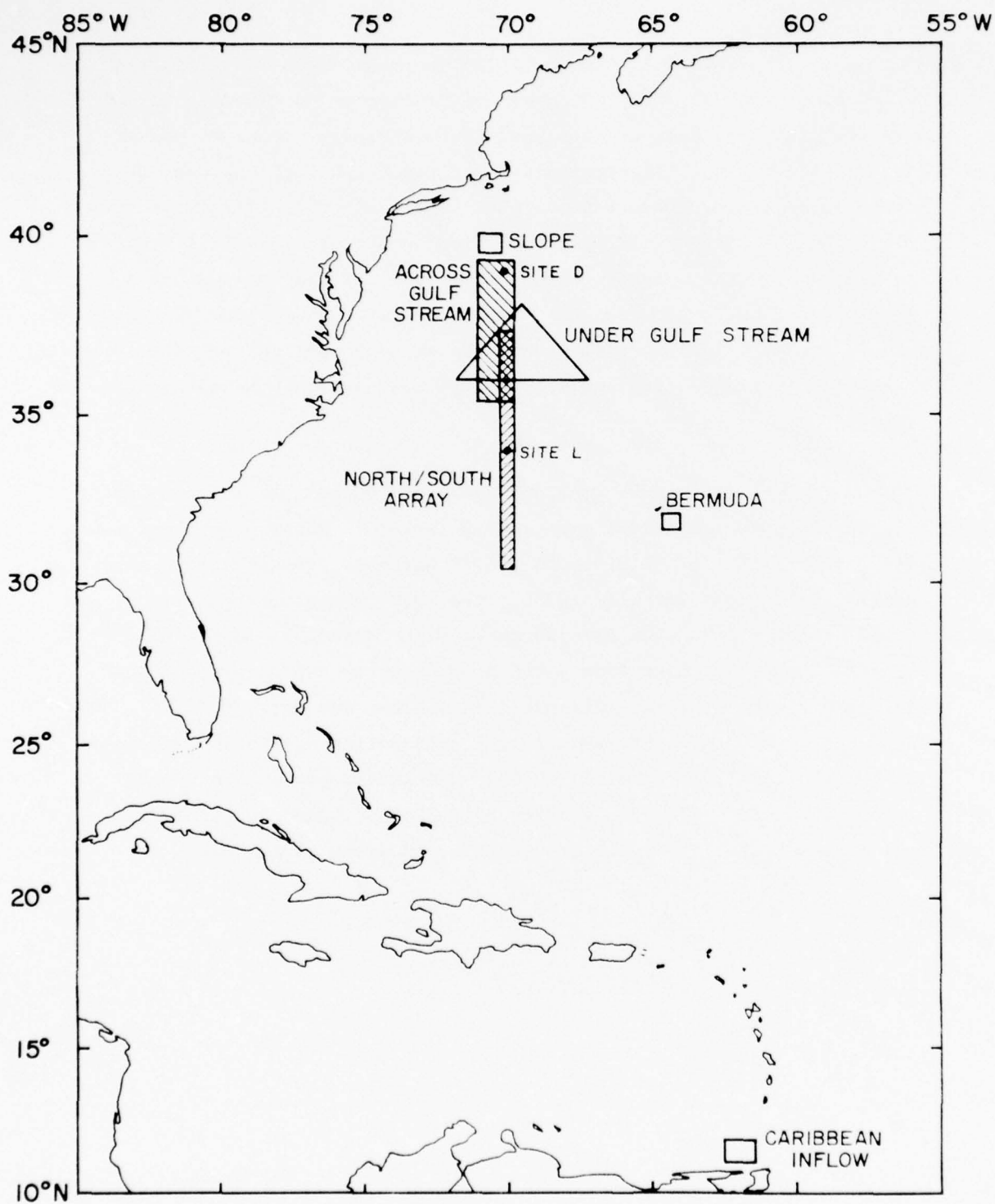


FIG. 1 AREAS OF THE EXPERIMENTS INCLUDED  
IN THIS REPORT

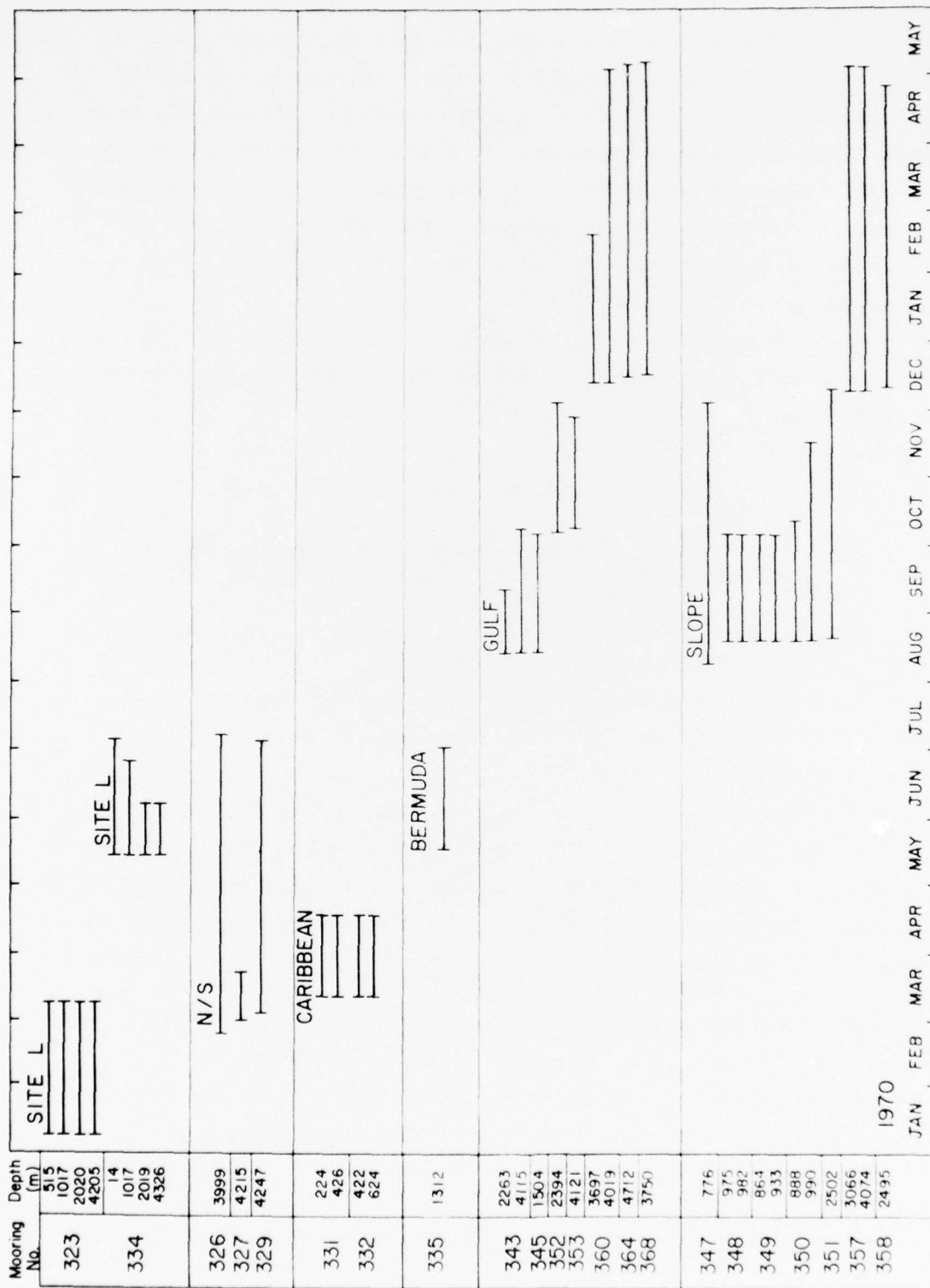


Fig 2. Presenting data duration by area, depth and time

### Time Base Information

During 1970 the last current meters that used mechanical clocks were modified to use the more accurate crystal clock. Instead of two asynchronous cams and one R-C oscillator, a single quartz oscillator was used. The crystal, oscillating at a frequency of 74.5654 KHz, provides clocking pulses to the instrument and indicates time by placing a 14 bit time word at the beginning of each recording interval. The accuracy of the crystal clock is  $\pm 1$  second per day while the accuracy of the mechanical clock is  $\pm 10$  seconds per day.

To provide secondary time information, artificial events are placed in the rotor field both before and after the sea data. The procedure to do this is as follows:

For First Events,

- Step 1. Turn the record circuit on (not to be turned off until recovery)
- Step 2.
  - a) Block the rotor to prevent it from turning
  - b) Allow instrument to record several data cycles with the rotor immobilized
- Step 3. (t) Ten seconds after a recording interval starts, spin the rotor as fast as possible
- Step 4. (t) In a successive record spin the rotor again
- Step 5. Stop rotor again until just before launch
- Step 6. (t) Free the rotor

For Last Events,

- Step 1. (t) After recovery block rotor for several recording intervals
- Step 2. (t) Ten seconds after a recording interval starts, spin the rotor
- Step 3. (t) Spin the rotor again in a following record
- Step 4. Stop rotor for several records before shutting off the record circuit.

The previous steps that are marked with a (t) are the most easily seen in the data and times should be noted using radio time signal.

The strobe rate reveals which clock was used in an instrument. The mechanical clock samples at 5 seconds, the crystal clock samples at 5.27 seconds.

### Direction Corrections

Two causes of inaccuracy in direction were discovered in the Model 850 current meter in 1971. The data in this report have been corrected for both problems.

One problem was caused by a constant offset between the external vane and the internal vane follower. To correct this a constant value was added to each vane reading.

The second problem was caused by the horizontal component of the earth's magnetic field which deflected the vane follower slightly north of the proper direction. This northerly bias is greatest for magnetic East and West and decreases as the vane follower approaches North or South. A sine wave correction whose magnitude was determined by the local strength of the horizontal component of the magnetic field and the strength of the vane magnets was applied to the data. For Site D the general correction was  $\pm 7^\circ$ , for Site L,  $\pm 9^\circ$ .

### Nomenclature

An \* following the data name on a mooring page means that the data series is presented. Comments are included on the mooring page for current meter data not presented.

The magnetic tape recording current meters built by Geodyne Corporation, now part of EG&G are referred to as the Model 850 current meter.

R.V. AII is an abbreviation for Research Vessel ATLANTIS II.

A dummy current meter is really a test of the pressure case for the new vector averaging current meter.

Tens.	Tensiometer
Tel.	Telemetry device
Incl.	Inclinometer
Depth Rec.	Depth recorder

To insure that each data series has a unique and meaningful name the following is practiced:

The first three digits are the mooring number	323
The next digit is the instrument position on the mooring	3
Consecutive letters of the alphabet indicate successive modification of the data (editing stages, truncation, etc.)	D
Vector averaging interval: 900 (seconds), 1H (Hour), etc.	1800
Total data name	3233D1800



#### Hydrostation Data Selection

Temperature and salinity data from Nansen bottle casts are presented if the station was taken near one of the moorings. The plot, where shown, is presented opposite the mooring description page. The first line of the legend at the bottom of the temperature - salinity plot describes the ship (e.g., AN = R. V. Atlantis II, CI = R. V. Chain, KN = R. V. Knorr), the cruise number, and the hydrostation number of the data shown. The position and date of the hydrocast are also included.

#### Current Meter Data Selection

Only good current meter data from 1970 are presented in this report. Good is defined to mean data time series which have no known errors or whose errors have been corrected.

#### Current Meter Processing

All of the current meter data presented in this report came from Geodyne (now part of EG&G) Model 850 current meters. These instruments burst-sample compass, vane and rotor values and store them plus time information on 1/4" two track magnetic tape cartirdges. The data were transcribed onto a nine track magnetic tape at W.H.O.I. using a specially designed reader. The data were then converted to the Maltais Format (Maltais, 1969) and stored as compass, vane, bearing, scalar speed and time.

Random erroneous values and systematic errors were edited from the burst sampled data, then a vector average was formed for each data burst. Next, an evenly spaced time series was created by interpolating through gaps in the data. The resulting basic vector series was used for input to other programs such as those producing statistics and a one-hour vector averaged series.

A low passed 1 hour vector series was used to create the stick plots.

### Data Presentation

The current meter data are shown in numerical order. Associated hydrostation and mooring information precede the data from each mooring. Where hydrostation data are not available other data or plots may be substituted. The displays used to present each current meter series are described in succeeding paragraphs.

### *Statistics (STATS)*

Standard statistical parameters are calculated for data in the time range given at the bottom of the table. Given  $n$  speed and direction or temperature values in a sample, we define  $E_i = S_i \sin \theta_i$ ,  $N_i = S_i \cos \theta_i$ , then for  $A = E, N$ , and  $S$ .

$$\text{mean, } \bar{A} = \frac{1}{n} \sum_{i=1}^n A_i$$

$$\text{variance, } \sigma_A^2 = \frac{1}{n} \sum_{i=1}^n A_i^2 - \bar{A}^2$$

$$\text{standard error of the mean} = \frac{\sigma_A}{\sqrt{n}}$$

$$\text{standard deviation} = \sigma_A$$

$$\text{skewness} = \frac{1}{\sigma_A^3} \left[ \frac{1}{n} \sum_{i=1}^n A_i^3 - \frac{3\bar{A}}{n} \sum_{i=1}^n A_i^2 + 2\bar{A}^3 \right]$$

$$\text{kurtosis} = \frac{1}{\sigma_A^4} \left[ \frac{1}{n} \sum_{i=1}^n A_i^4 - \frac{4\bar{A}}{n} \sum_{i=1}^n A_i^3 + \frac{6\bar{A}^2}{n} \sum_{i=1}^n A_i^2 - 3\bar{A}^4 \right]$$

The program also calculates "East and North" statistics,

$$\text{covariance, } M = \frac{1}{n} \sum_{i=1}^n E_i N_i - \bar{E} \bar{N}$$

$$\text{standard deviation of covariance, } \sigma_m = \frac{1}{n} \sum_{i=1}^n (E_i N_i)^2 - \overline{E_i N_i}^2$$

$$\text{standard error of covariance} = \frac{\sigma_m}{\sqrt{n}}$$

$$\text{correlation coefficient, } M^* = \frac{M}{\sigma_E \sigma_N}.$$

The program also calculates parameters related to vector quantities: the scalar amplitude of the vector mean,  $V_m = \sqrt{\bar{E}^2 + \bar{N}^2}$ ; vector variance,  $V_v^2 = \frac{1}{2} (\sigma_E^2 + \sigma_N^2)$ ; standard deviation =  $V_v$ .

### *Spectra*

The program TIMSAN (TIME Series Analysis) uses the Fast Fourier Transform algorithm of Singleton (1969) and is restricted to data segments of length  $N$  points, where  $N$  must be an even number which has no prime factor larger than 5, and must be less than 8000 points; data series longer than this must be broken into two or more pieces.

The number of degrees of freedom for the first 40 plotted points is given by  $v = a m s$  where  $m$  is the number of adjacent frequency bands being averaged (8),  $s$  is the number of independent data pieces being averaged (1), and  $a$  should be two for Horizontal Kinetic Energy [HKE] spectra for which the EAST and NORTH components seem statistically independent. In the absence of information regarding NORTH-EAST correlation, one should use  $a = 2$  to be safe.

On log-log plots the number of points averaged together increases with frequency. This eliminates the bunching together of points at high frequencies, increases the degrees of freedom of the high frequency estimates, and still permits low-frequency resolution. The averaging



practice is as follows: counting from the left of the plot, the first 40 plotted points represent data that have been averaged over 8 adjacent frequency bands; the data for the next 15 plotted points have been averaged over twice as many frequency bands; the next 6 over five times as many, the next 40 over ten times as many, the next 15 over twenty times as many, the next 6 over fifty times as many, the next 40 over 100 times as many and so on. In this way, for example, 7900 data points with no averaging would be plotted as only 176 points, and the last 14 estimates would be averaged over 200 basic frequency bands. The  $m$  in the formula  $v = a m s$  for degrees of freedom is, in this example, 200 times larger at the highest frequencies than at the lowest frequencies.

For  $v > 30$ , the confidence limits for the spectral estimates are given approximately by  $(1 - 2/9v \pm Z\sqrt{2/9v})^{1/3}$  where  $Z = 1.28375$  for 80% confidence limits,  $Z = 1.645$  for 90%,  $Z = 1.96$  for 97% and  $Z = 2.5757$  for 99%. In the example above, if the HKE spectral plot had 2 pieces and was averaged over 8 adjacent frequency bands then  $v = 2 \times 2 \times 8 = 32$  for the lowest frequencies (assuming NORTH and EAST components are highly correlated) and  $200 \times 32 = 6400$  for the highest frequencies. The 95% confidence intervals (i.e., 95% of the time one would expect the spectral estimates to vary no more than this much) would be (0.57, 1.55) at low frequencies, and (0.97, 1.03) at high frequencies.

For  $v \leq 30$ , one must obtain confidence intervals from Chi-Squared distribution tables in standard statistical references.

#### *Stick Plot*

The hourly  $U$  and  $V$  time series are filtered using a symmetrical running Gaussian filter with a half-width of 24 hours. The resultant series is 48 hours shorter than the input time series (the first and last 24 hours are lost). Three scales for the time axis were used. The short data were subsampled so that there were six points plotted per day, medium length data were plotted four points per day, and long data series were plotted two points per day. Vector direction usually follows normal direction conventions, i.e., north is up. Occasionally the plot will be rotated to show East up when the current flow is markedly easterly or westerly. A second type of stick presentation displays consecutive boxes for the array period in which daily averages of the filtered vectors are plotted according to mooring position.

### *Variable vs. Time Plot*

This is a plot of any variable as a function of TIME. The plot is generated from the 1 hour vector averaged series. In some plots of speed it is possible to see the rotor threshold of 1.8 cm/sec.

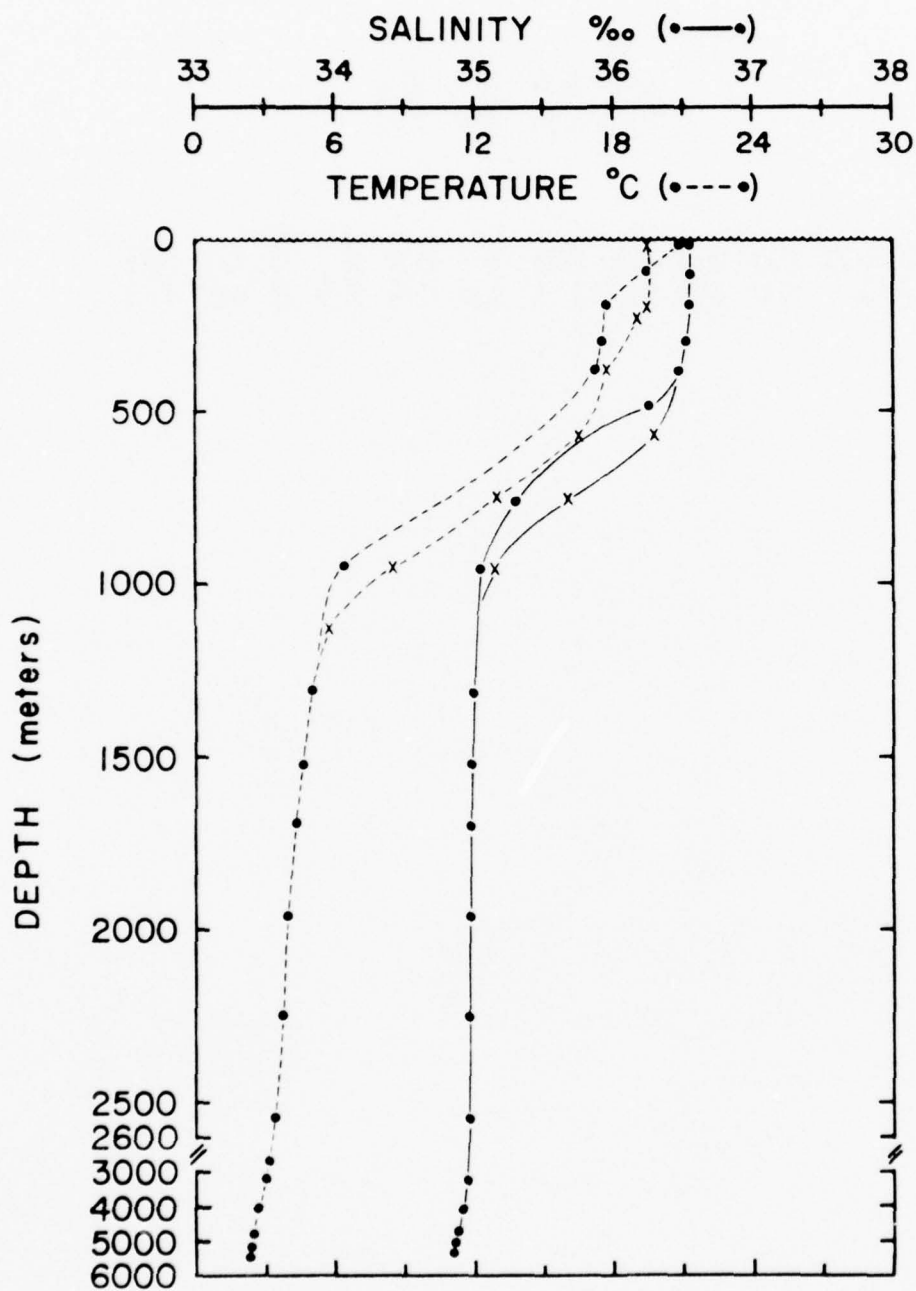
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A compilation of moored current meter observations, Volume III.  
W.H.O.I. Ref. 67-66 (unpublished manuscript).

# **data presentation**



CI-97-929 (x)

LAT. 33° 53.5' N

LONG. 70° 0.0' W

DATE 70-01-8

AN-57-1725 (•)

LAT. 33° 54.0' N

LONG. 69° 48.0' W

DATE 70-05-14



MOORING NO. 323

Lat. 33° 58.5'N Long. 69° 58.5'W

Set January 8, 1970

Set by R. Heinmiller

Ship R. V. Chain Cruise 97

Recovered May 13, 1970

Recovered by J. Gifford

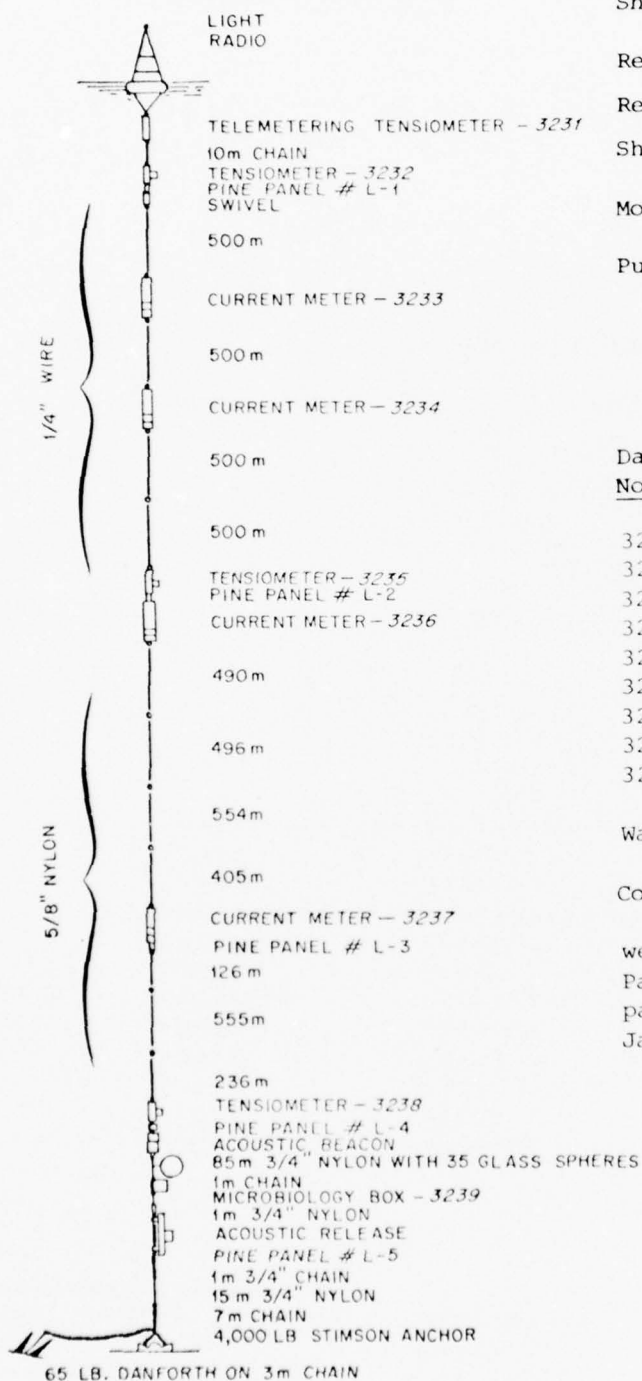
Ship R. V. AII Cruise 57

Mooring type - Surface

Purpose of mooring

A) Current measurement at Site L

B) Engineering wire test



Data No.	Instr. Type	Depth (m)
3231	Tel. Tens.	2
3232	Tens.	13
3233*	Model 850	515
3234*	Model 850	1017
3235	Tens.	2018
3236*	Model 850	2020
3237*	Model 850	4205
3238	Tens.	5236
3239	Bio pack	5333
Water depth		5365

#### Comments

Also included on this mooring were a biological fouling test for Paul Stimson and a microbiology package for Drs. Eimhjellen and Jannasch.

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Data number 3233

Instrument No.: M-232

Type: Model 850

Depth: 515 m

Water depth: 5365 m

Start time: 70-I-08 19.52.05

Stop time: 70-III-09 19.22.05

Duration: 59d 23h 30m

Sampling scheme: Interval

time between strobes = 5 seconds

no. of strobes per interval = 15

interval time = 1800 seconds

COMMENTS:

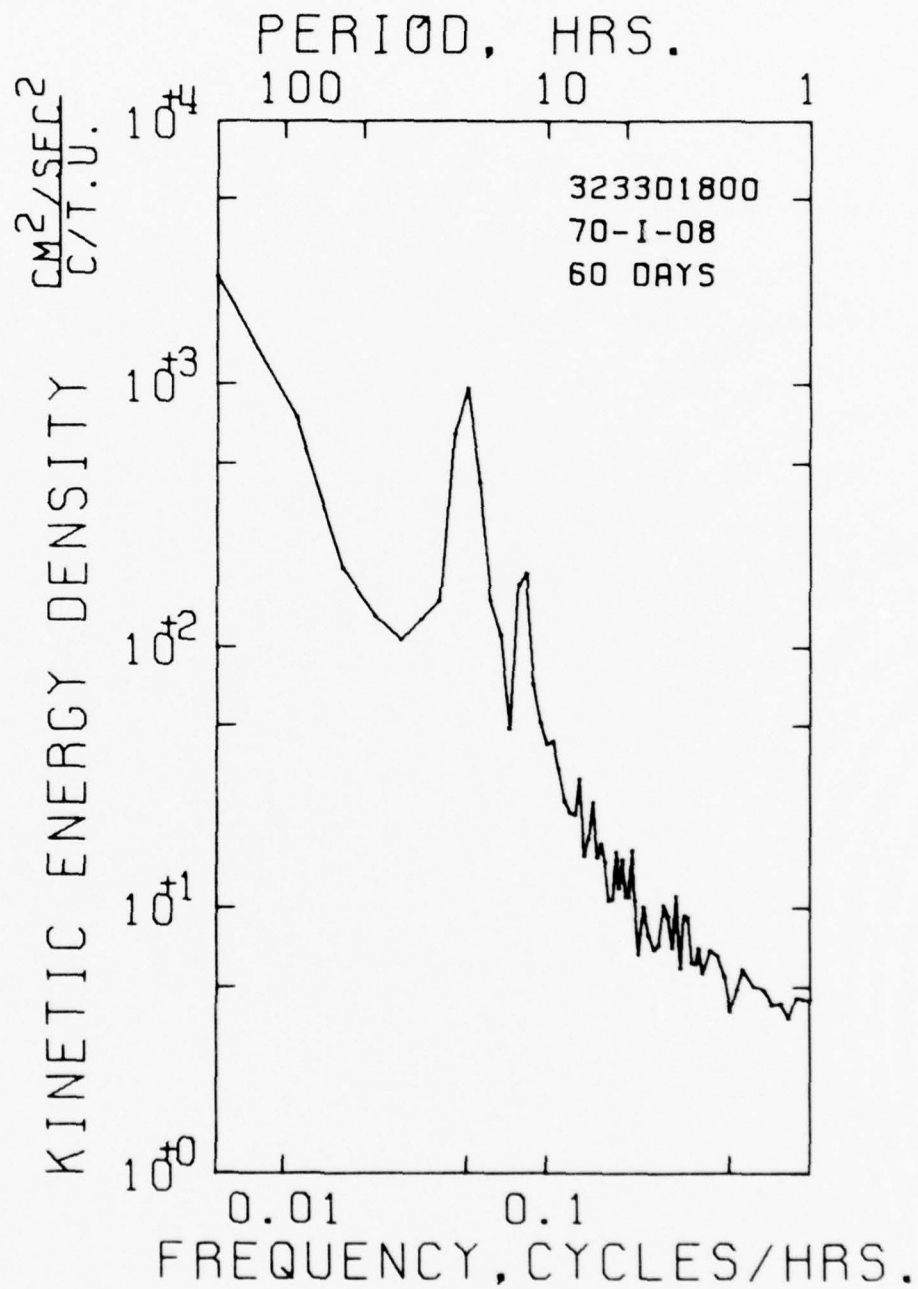
DATA/ 323301800

```
*****
VARIABLE *      EAST      NORTH      SPEED
UNITS *      MM/SEC      MM/SEC      MM/SEC
*****
MEAN *      -120.768      -134.137      306.166
STD. ERR. *      3.329      3.525      1.507
VARIANCE *      31911.915      35785.448      6537.344
STD. DEV. *      178.639      189.170      80.854
KURTOSIS *      1.714      1.991      3.471
SKEWNESS *      .245      .252      -.423
MINIMUM *      -452.702      -507.388      7.000
MAXIMUM *      305.144      299.596      516.000
*****
```

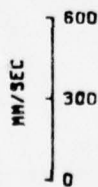
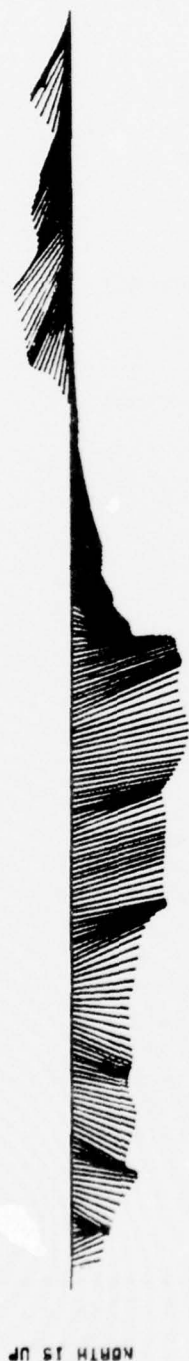
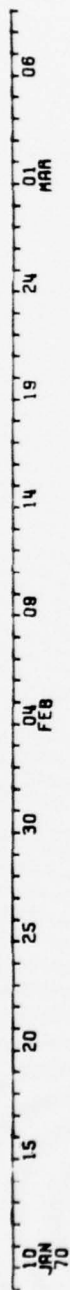
\*\*\*\*\*
EAST & NORTH
\*\*\*\*\*

```
COVARIANCE *      -26490.888
STD. ERR. OF COVARIANCE *      622.082
STD. DEV. OF COVARIANCE *      33284.410
CORRELATION COEFFICIENT *      -.784
VECTOR MEAN *      180.493
VECTOR VARIANCE *      33848.682
VECTOR STD. DEV. *      183.980
```

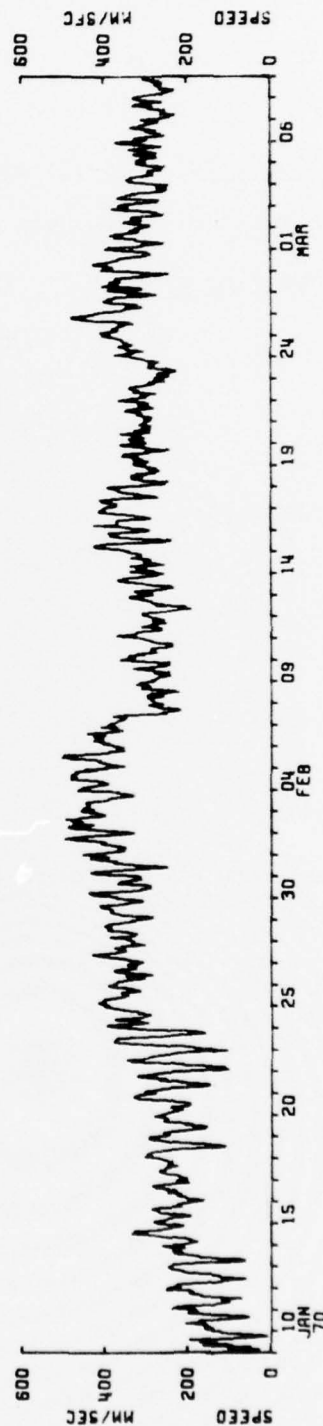
```
*****
* SAMPLE SIZE = 2880 PRINTS
*
* SPANNING RANGE
* FROM 70- I -08 19.52.05
* TO 70- III-09 19.22.05
*
* DURATION 59.98 DAYS
*****
```







32330



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Data number 3234Instrument No.: M-226Type: Model 850Depth: 1017 mWater depth: 5365 mStart time: 70-I-08 20.15.05Stop time: 70-III-09 19.45.05Duration: 59d 23h 30mSampling scheme: Interval

time between strobes = 5 seconds

no. of strobes per interval = 15

interval time = 1800 seconds

COMMENTS:

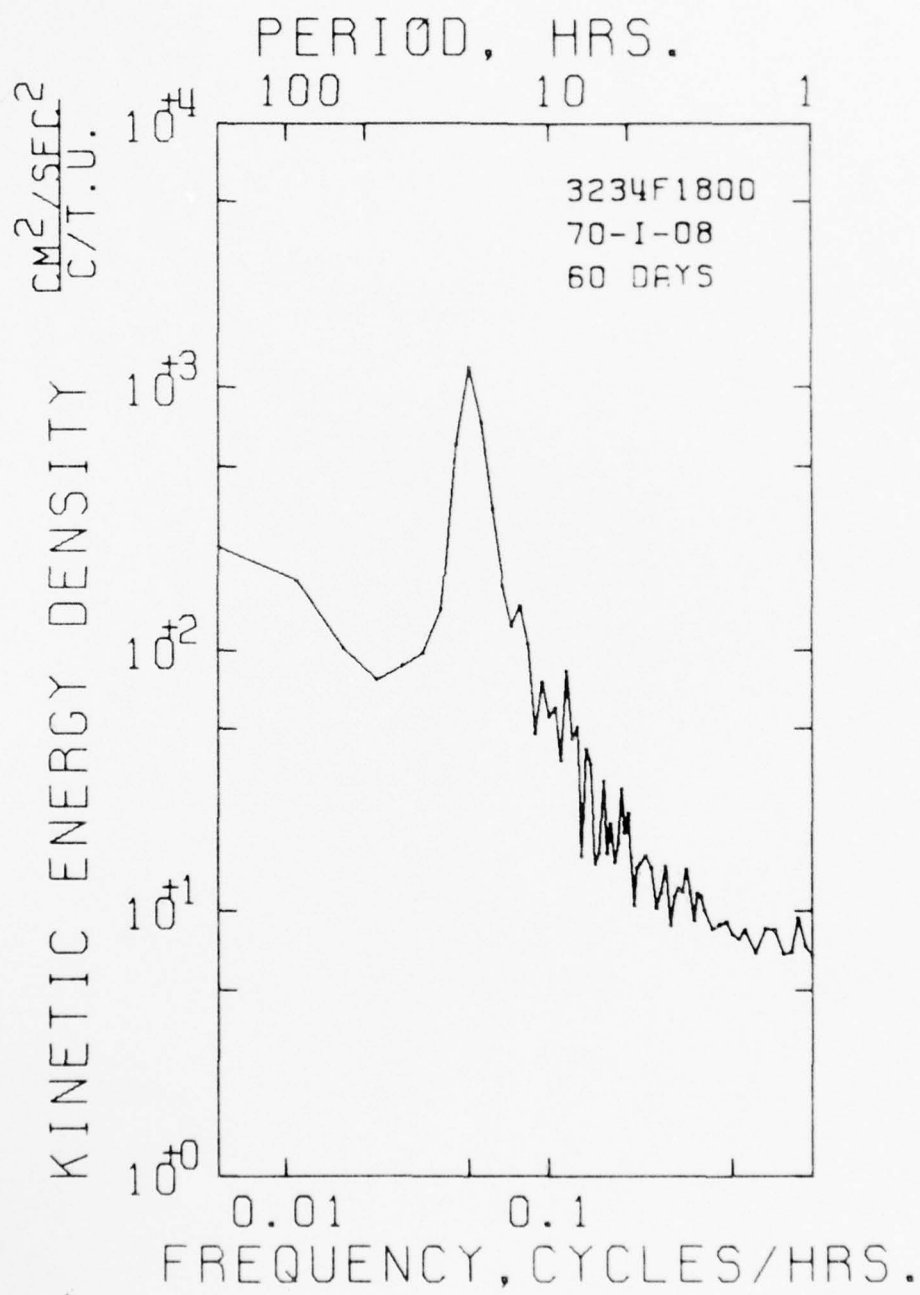
DATA/ 3234F1800

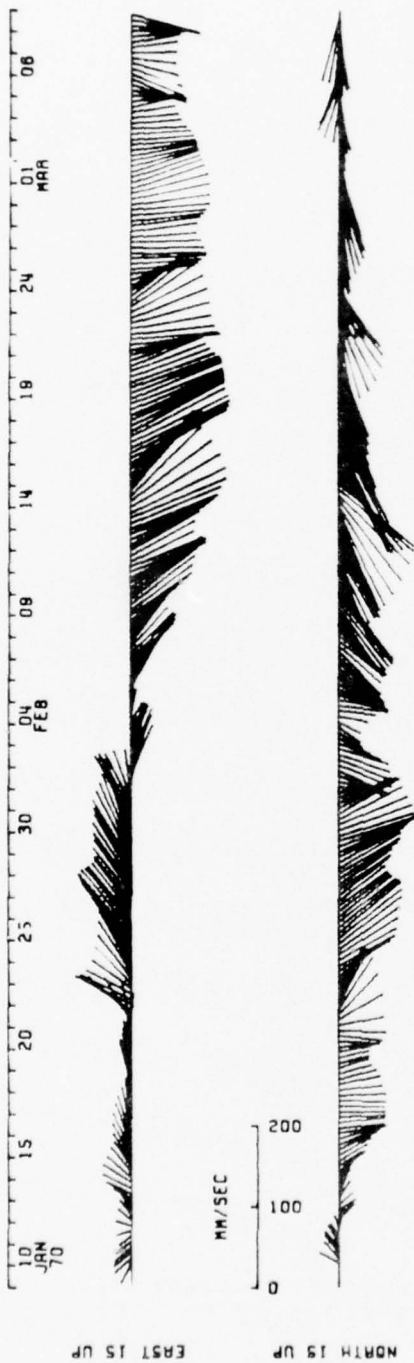
VARIABLE	EAST	NORTH	SPEED
UNITS	MM/SEC	MM/SEC	MM/SEC
MEAN	-35.077	-37.498	108.024
STD. ERR.	1.478	1.226	.742
VARIANCE	4201.375	4727.281	1586.061
STD. DEV.	73.318	65.782	39.825
KURTOSIS	2.208	2.594	2.488
SKEWNESS	.321	.264	-.174
MINIMUM	-221.000	-203.000	1.000
MAXIMUM	170.138	162.215	221.000

\*\*\*\*\*  
 EAST & NORTH  
 \*\*\*\*\*

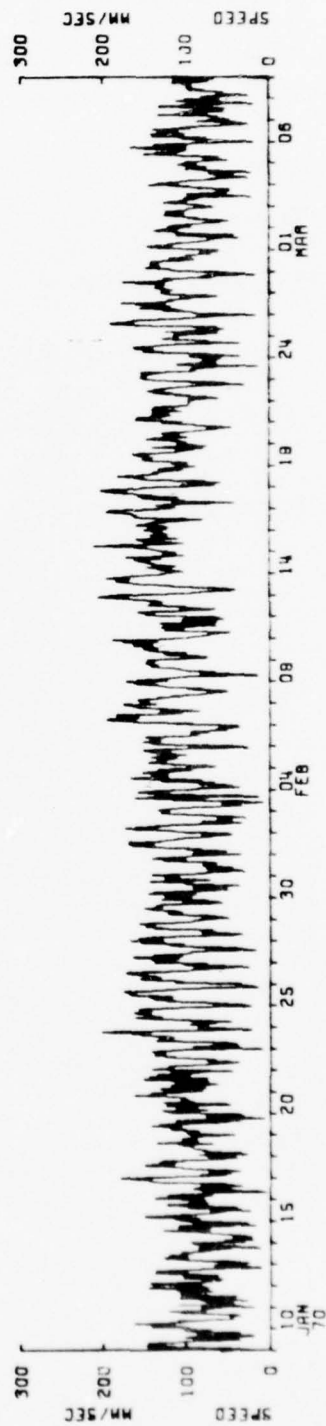
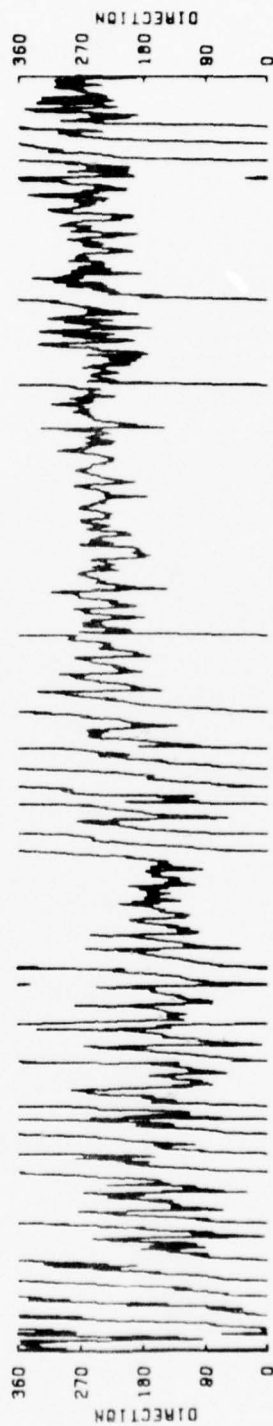
COVARIANCE	-667.094
STD. ERR. OF COVARIANCE	101.417
STD. DEV. OF COVARIANCE	5442.608
CORRELATION COEFFICIENT	-.128
VECTOR MEAN	51.347
VECTOR VARIANCE	5309.328
VECTOR STD. DEV.	72.865

\*\*\*\*\*  
 \* SAMPLE SIZE = 2880 PRINTS  
 \*  
 \* SPANNING RANGE  
 \* FROM 70- I -08 20.15.05  
 \* TO 70- III-09 19.45.05  
 \*  
 \* DURATION 59.98 DAYS





3234F



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Data number 3236

Instrument No.: M-206

Type: Model 850

Depth: 2020 m

Water depth: 5365 m

Start time: 70-I-08 20.01.55

Stop time: 70-III-09 20.01.55

Duration: 60d

Sampling scheme: Interval

time between strobos = 5 seconds

no. of strobos per interval = 16

interval time = 1800 seconds

COMMENTS:

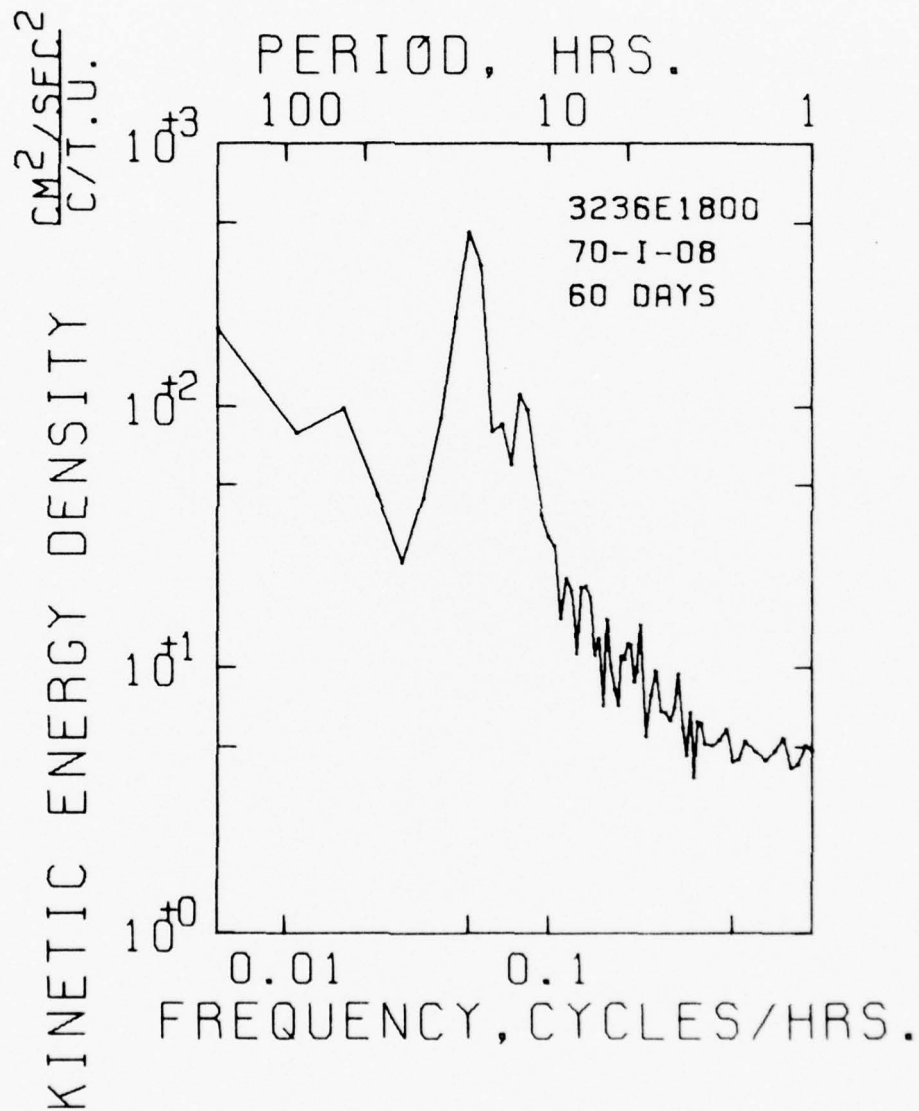
DATA/ 3236E1800

```
*****
VARIABLE *      EAST      NORTH      SPEED
UNITS    *      MM/SEC    MM/SEC    MM/SEC
*****
MEAN      *      -20.264      15.425      76.492
STD. ERR. *      1.240      .808      .621
VARIANCE  *      4430.129      1882.533      1110.169
STD. DEV. *      66.559      43.388      33.319
KURTOSIS  *      2.016      2.637      2.614
SKEWNESS  *      .305E-1      .958E-2      .242
MINIMUM   *      -174.000      -106.676      2.000
MAXIMUM   *      143.821      162.887      175.000
*****
```

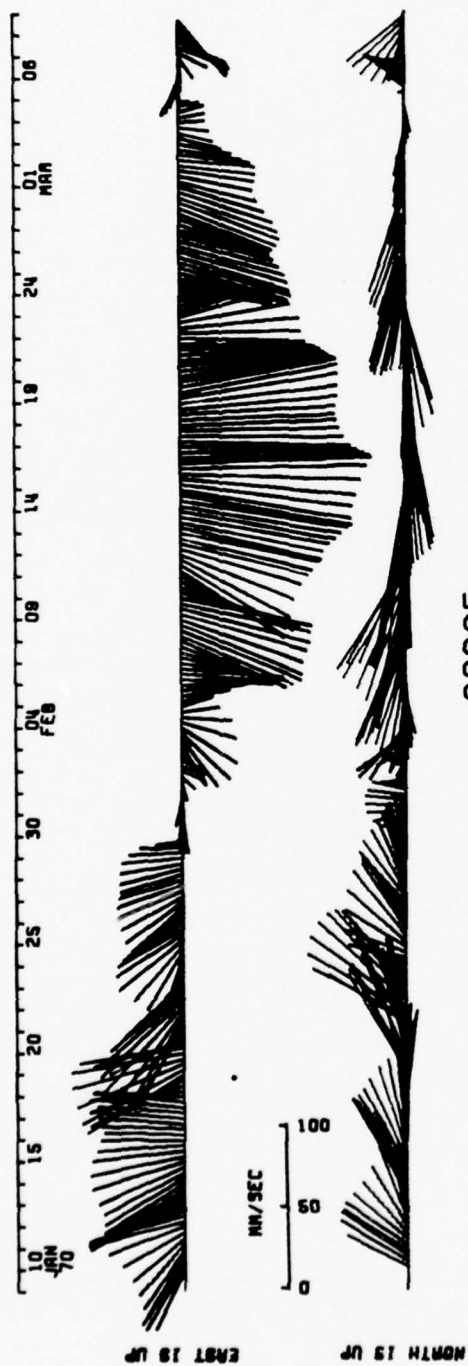
\*\*\*\*\*
EAST & NORTH
\*\*\*\*\*

```
COVARIANCE *      279.536
STD. ERR. OF COVARIANCE *      54.488
STD. DEV. OF COVARIANCE *      2924.629
CORRELATION COEFFICIENT *      .968E-1
VECTOR MEAN *      25.467
VECTOR VARIANCE *      3156.331
VECTOR STD. DEV. *      56.181
```

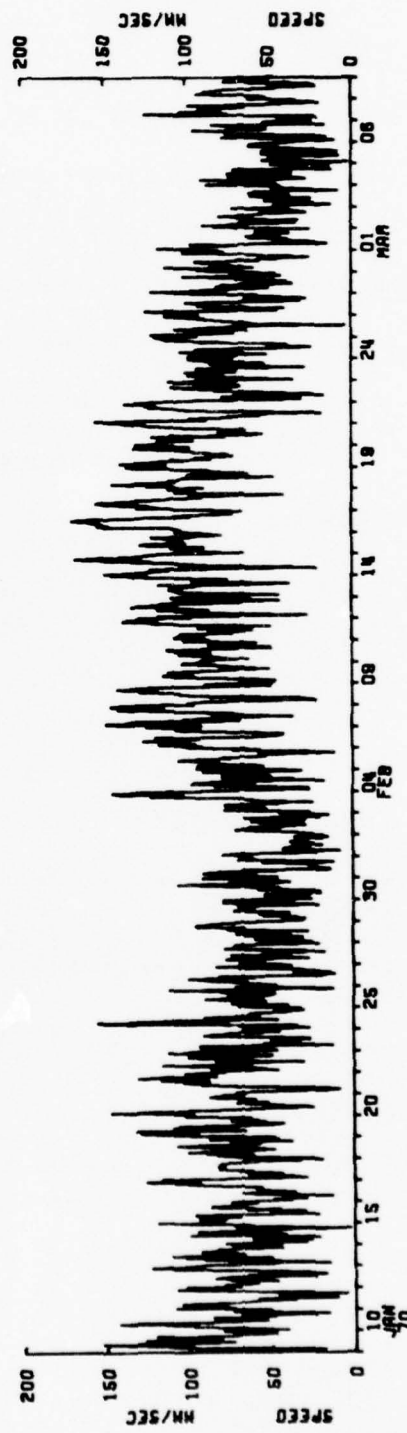
```
*****
* SAMPLE SIZE * 2881 PRINTS
* SPANNING RANGE
* FROM 70- I -08 20.01.55
* TO 70- III-09 20.01.55
* DURATION 60.00 DAYS
*****
```







3236E



Data number 3237

Instrument No.: M-227

Type: Model 850

Depth: 4205 m

Water depth: 5365 m

Start time: 70-I-08 20.52.42

Stop time: 70-III-09 19.52.42

Duration: 59d 23m

Sampling scheme: Interval

time between strobes = 5 seconds

no. of strobes per interval = 16

interval time = 1800 seconds

COMMENTS:

DATA/ 3237H1800

```
*****
VARIABLE *      EAST      NORTH      SPEED
UNITS    *      MM/SEC    MM/SEC    MM/SEC
*****
MEAN      *      2.587      8.541     105.263
STD. ERR. *      1.701      1.107       .546
VARIANCE  *    8334.995    3525.179    859.540
STD. DEV. *     91.296     59.373     29.318
KURTOSIS  *     1.514      1.954       3.005
SKEWNESS  *      .284      -.122E-1     -.468
MINIMUM   *    -143.826    -119.327     7.000
MAXIMUM   *     166.000     181.019    183.000
```

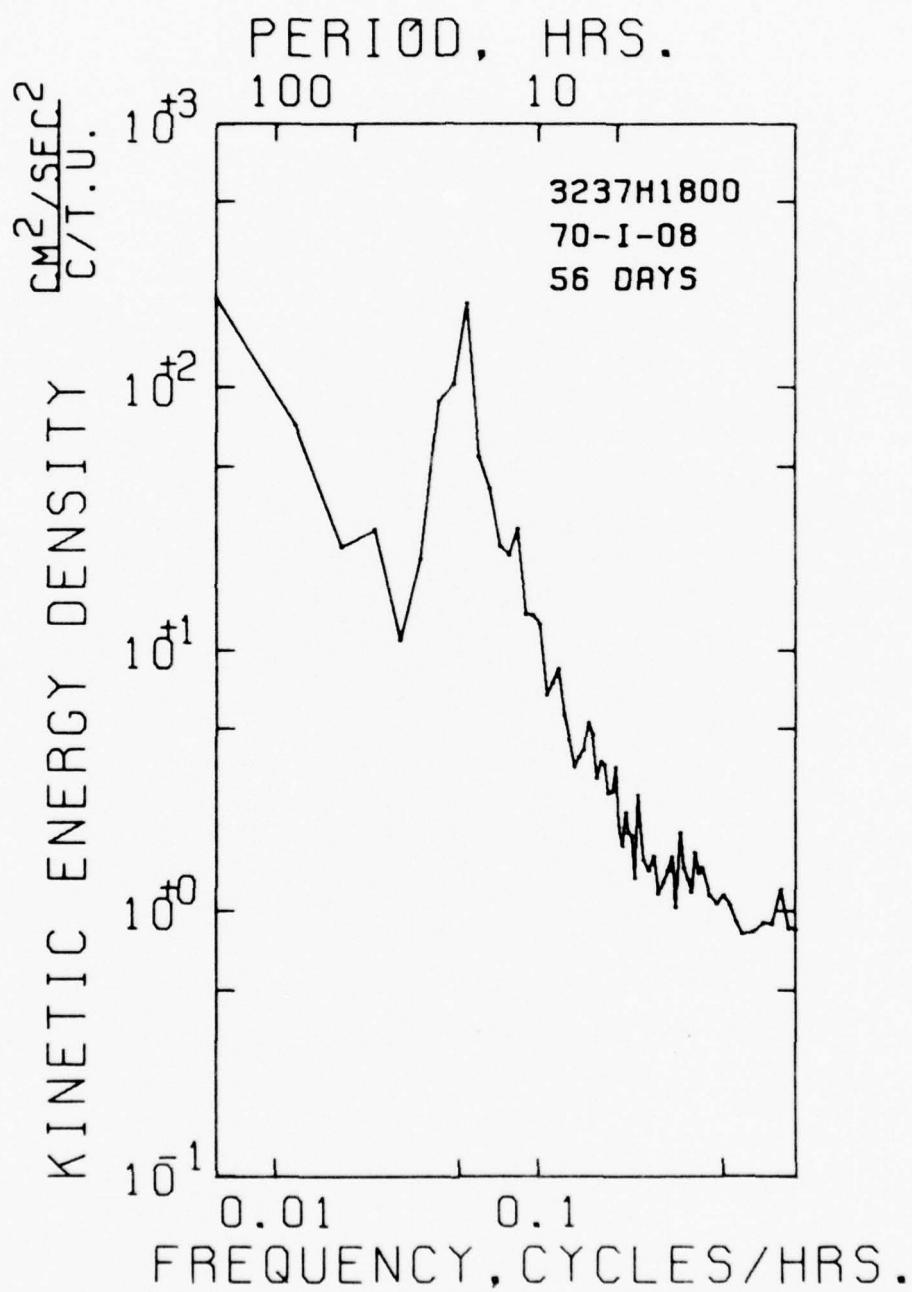
\*\*\*\*\*
EAST & NORTH

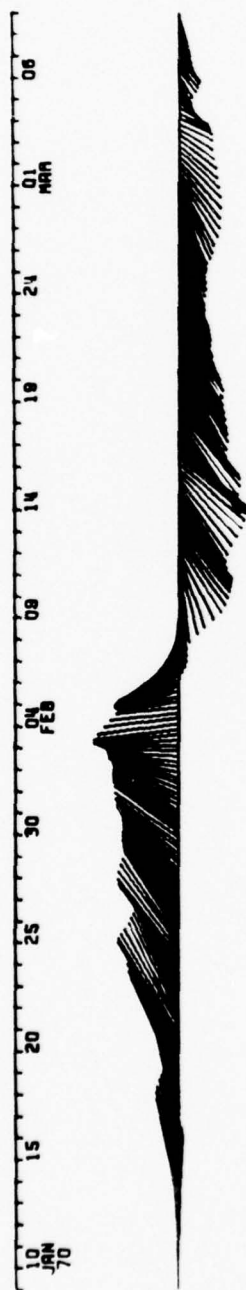
\*\*\*\*\*

```
COVARIANCE      *    2989.138
STD. ERR. OF COVARIANCE *    66.629
STD. DEV. OF COVARIANCE *   3575.068
CORRELATION COEFFICIENT *    .551
VECTOR MEAN      *    8.925
VECTOR VARIANCE   *   5930.087
VECTOR STD. DEV.  *    77.007
```

```
*****
* SAMPLE SIZE = 2879 POINTS
*
* SPANNING RANGE
* FROM 70- I -08 20.52.42
* TO 70- III-09 19.52.42
*
* DURATION 59.96 DAYS
```

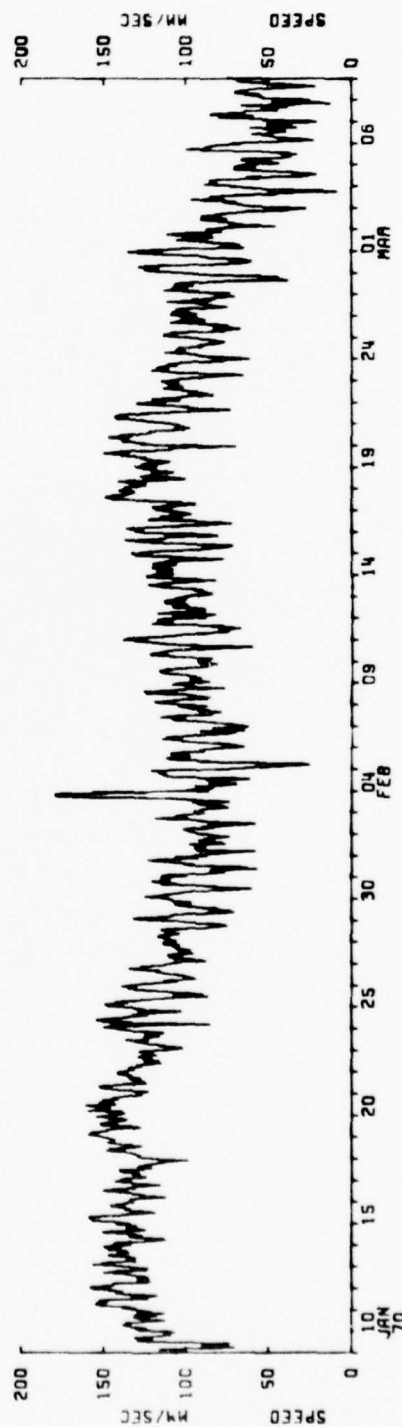
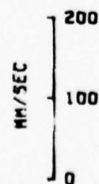






NORTH 15 UP

3237H



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MOORING NO. 326  
Lat. 37° 37.3'N Long. 70° 00.5'W

Set February 28, 1970

Set by A. Davidson

Ship R. V. Chain Cruise 98

Recovered July 8, 1970

Recovered by R. Heinmiller

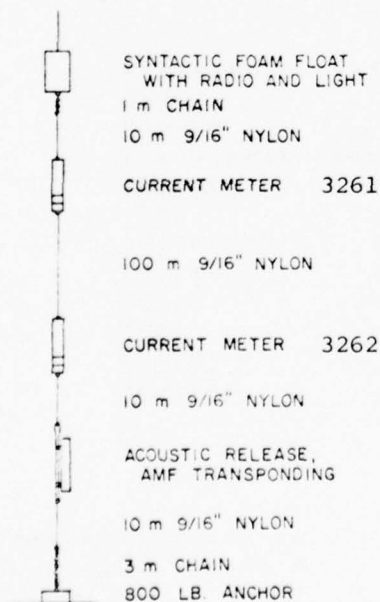
Ship R. V. Knorr Cruise 5

Mooring type - Bottom

Purpose of mooring

N/S Array with moorings 327 and  
329.

<u>Data</u> <u>No.</u>	<u>Instr.</u> <u>Type</u>	<u>Depth</u> <u>(m)</u>
3261*	Model 850	3999
3262	Model 850	4101
Water depth		4128



Comments

3262 - vane stuck entire record.

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Data number 3261

Instrument No.: M-142

Type: Model 850

Depth: 3999 m

Water depth: 4128 m

Start time: 70-II-28 17.30.34

Stop time: 70-VII-08 13.30.34

Duration: 129d 20h

Sampling scheme: Interval

time between strobos = 5.27 seconds

no. of strobos per interval = 16

interval time = 1800 seconds

COMMENTS:

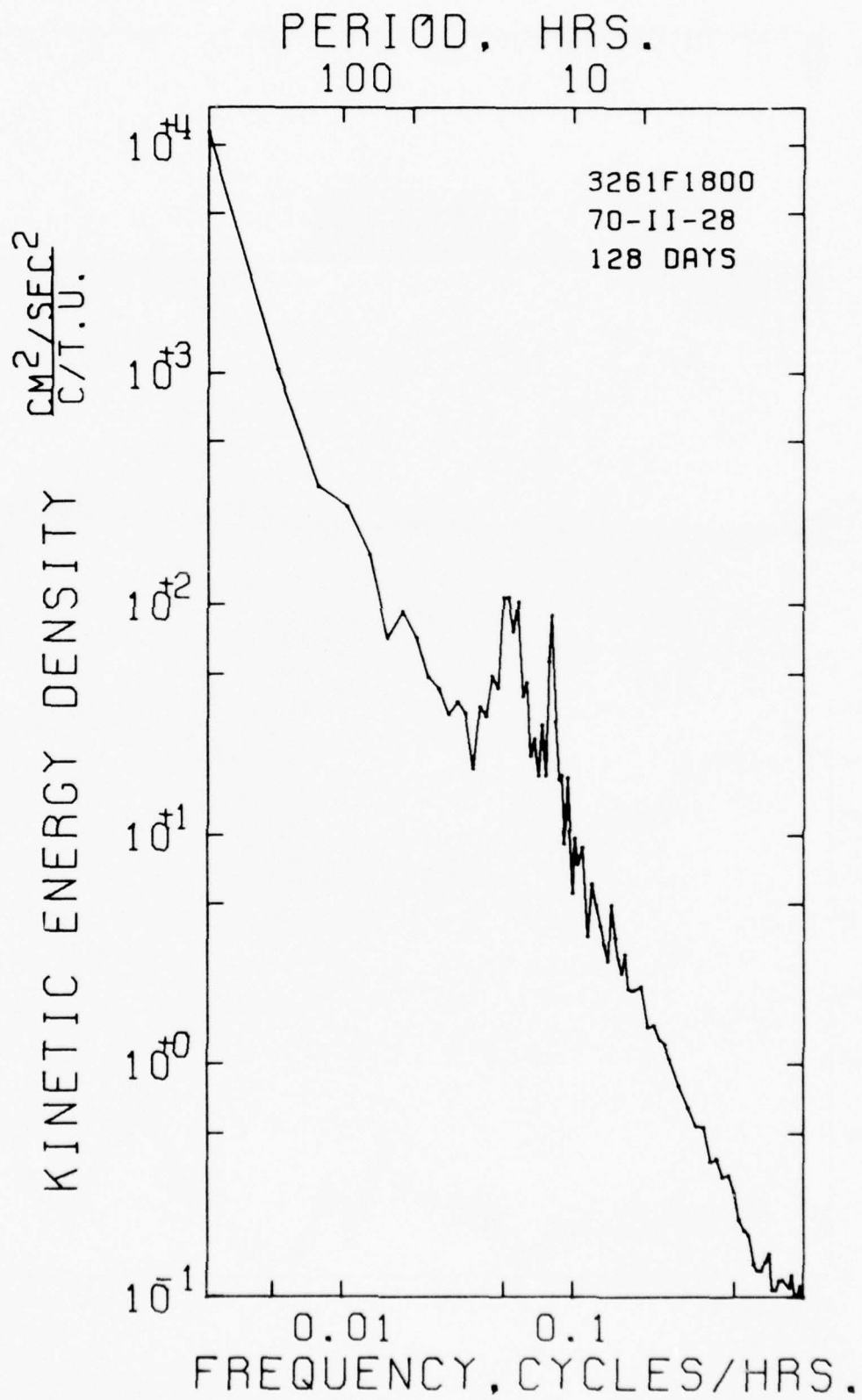
DATA/ 3261F1800

```
*****
VARIABLE *      EAST      NORTH      SPEED
UNITS    *      MM/SEC    MM/SEC    MM/SEC
*****
MEAN      *      -22.307      23.281      134.187
STD. ERR. *      1.663      .877      .901
VARIANCE  *      17231.935      4790.808      5056.151
STD. DEV. *      131.270      69.216      71.107
KURTOSIS  *      2.433      2.710      2.303
SKEWNESS  *      .224E-3      .480      .507
MINIMUM   *      -351.157      -130.444      18.000
MAXIMUM   *      295.764      228.198      355.000
```

\*\*\*\*\*
EAST & NORTH

```
*****
COVARIANCE *      -1490.521
STD. ERR. OF COVARIANCE *      110.431
STD. DEV. OF COVARIANCE *      8718.444
CORRELATION COEFFICIENT *      .164
VECTOR MEAN *      32.243
VECTOR VARIANCE *      11011.371
VECTOR STD. DEV. *      104.935
```

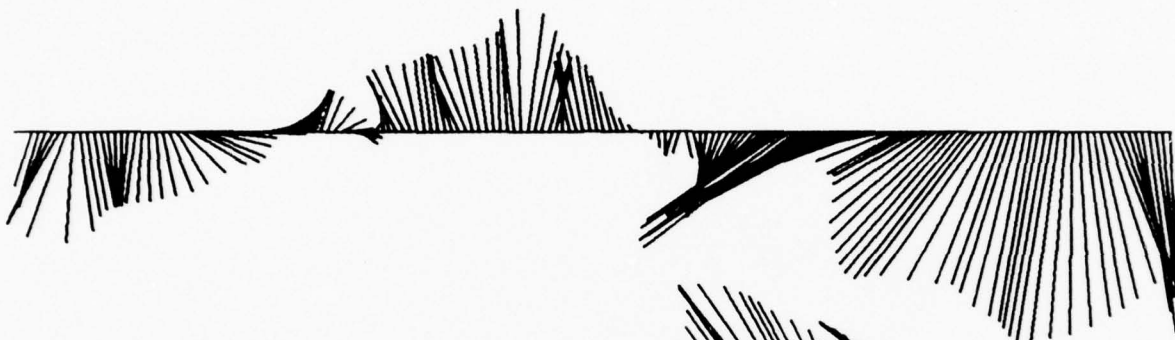
```
*****
* SAMPLE SIZE = 6233 POINTS
*
* SPANNING RANGE
* FROM 70-II-28 17.30.34
* TO 70-VII-08 13.30.34
*
* DURATION 129.83 DAYS
```



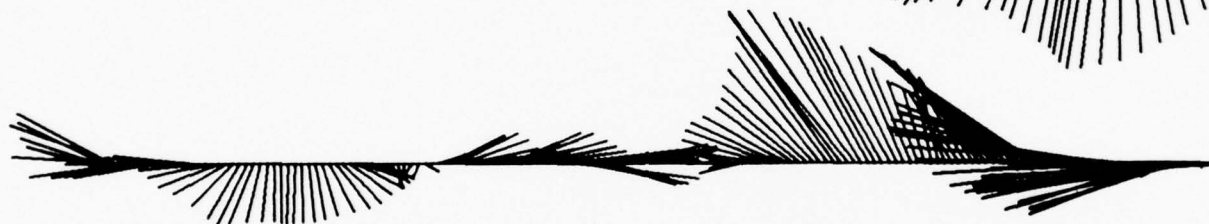


02 MAR 70 07 12 17 22 27 01 APR 06 11 16 21 26 01 MAY 06 11 16 21

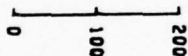
EAST IS UP



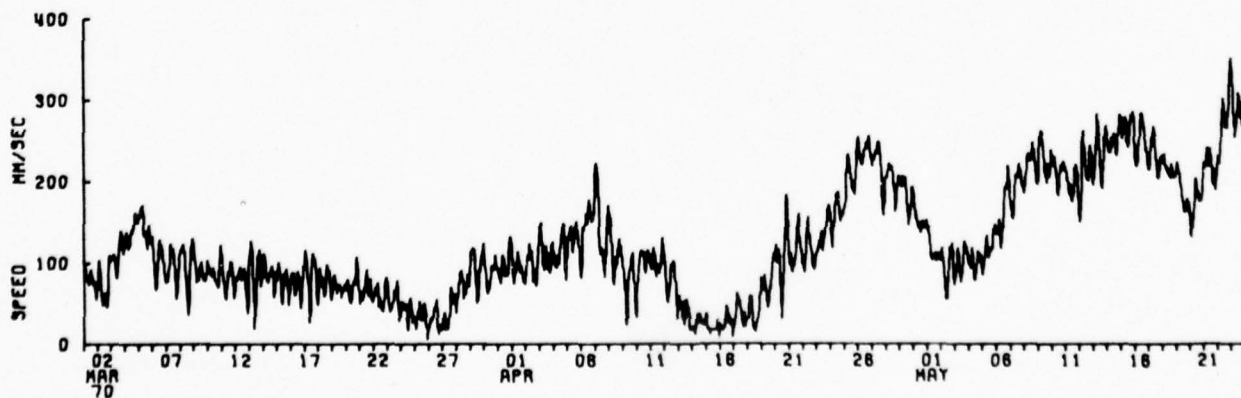
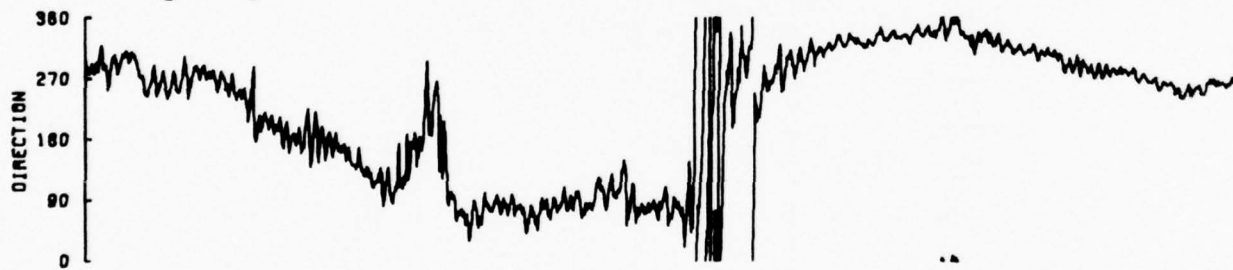
NORTH IS UP

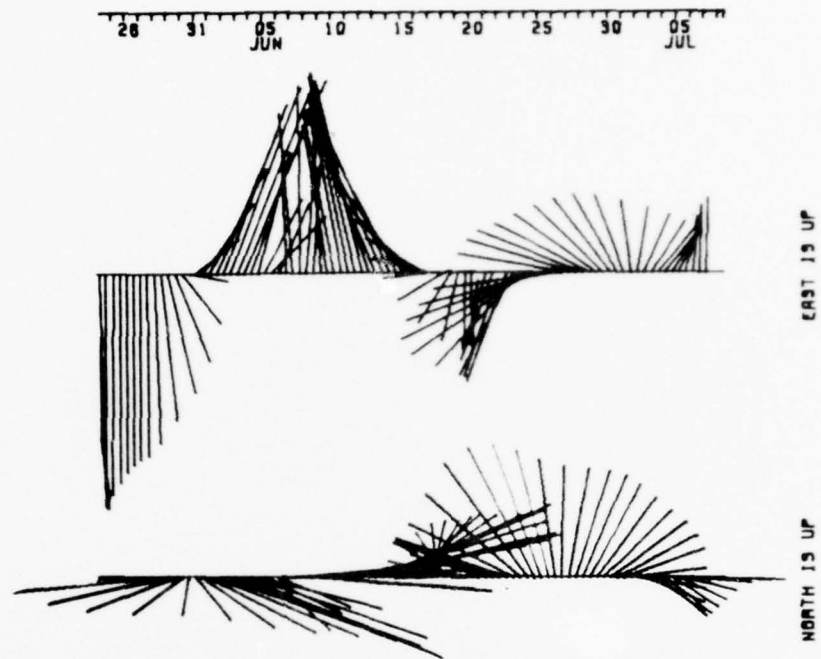


MM/SEC

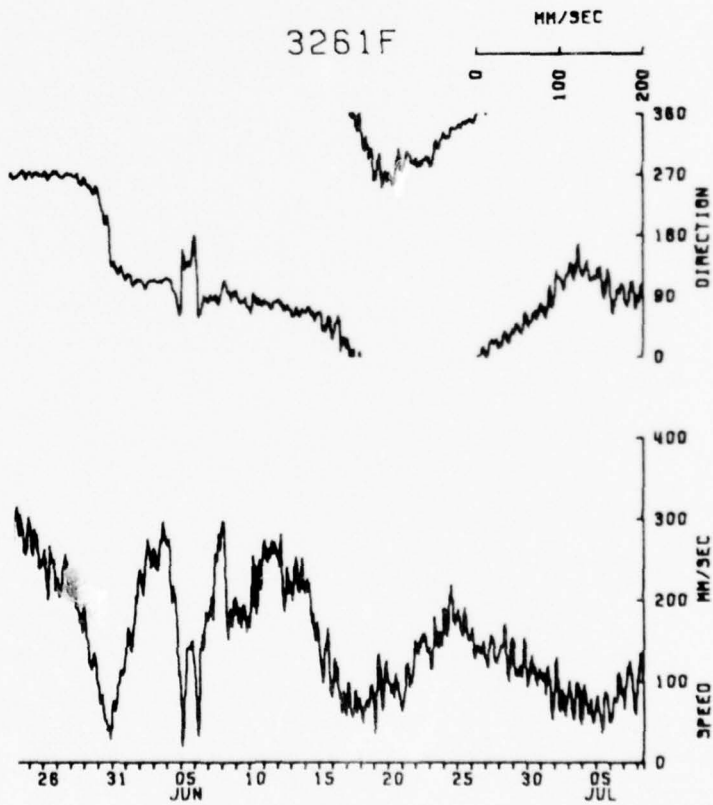


3261F





3261F



MOORING NO. 327

Lat. 36° 46.2'N Long. 69° 59.0'W

Set February 28, 1970

Set by A. Davidson

Ship R. V. Chain Cruise 98

Recovered July 8, 1970

Recovered by R. Heinmiller

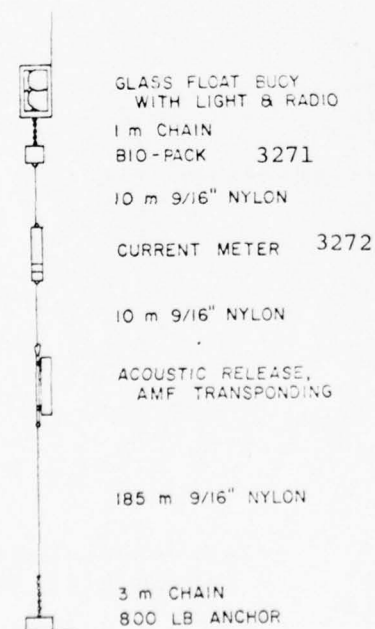
Ship R. V. Knorr Cruise 5

Mooring type - Bottom

Purpose of mooring

N/S Array with moorings 326 and 329.

<u>Data</u> <u>No.</u>	<u>Instr.</u> <u>Type</u>	<u>Depth</u> <u>(m)</u>
3271	Biopack	4204
3272*	Model 850	4215
Water depth		4417



#### Comments

A microbiology package was included on this mooring for Drs. Eimhjallen and Jannasch.

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Data number 3272

Instrument No.: M-129

Type: Model 850

Depth: 4215 m

Water depth: 4417 m

Start time: 70-III-01 00.00.34

Stop time: 70-III-23 08.00.34

Duration: 22d 08h

Sampling scheme: Interval

time between strobes = 5.27 seconds

no. of strobes per interval = 16

interval time = 1800 seconds

COMMENTS:

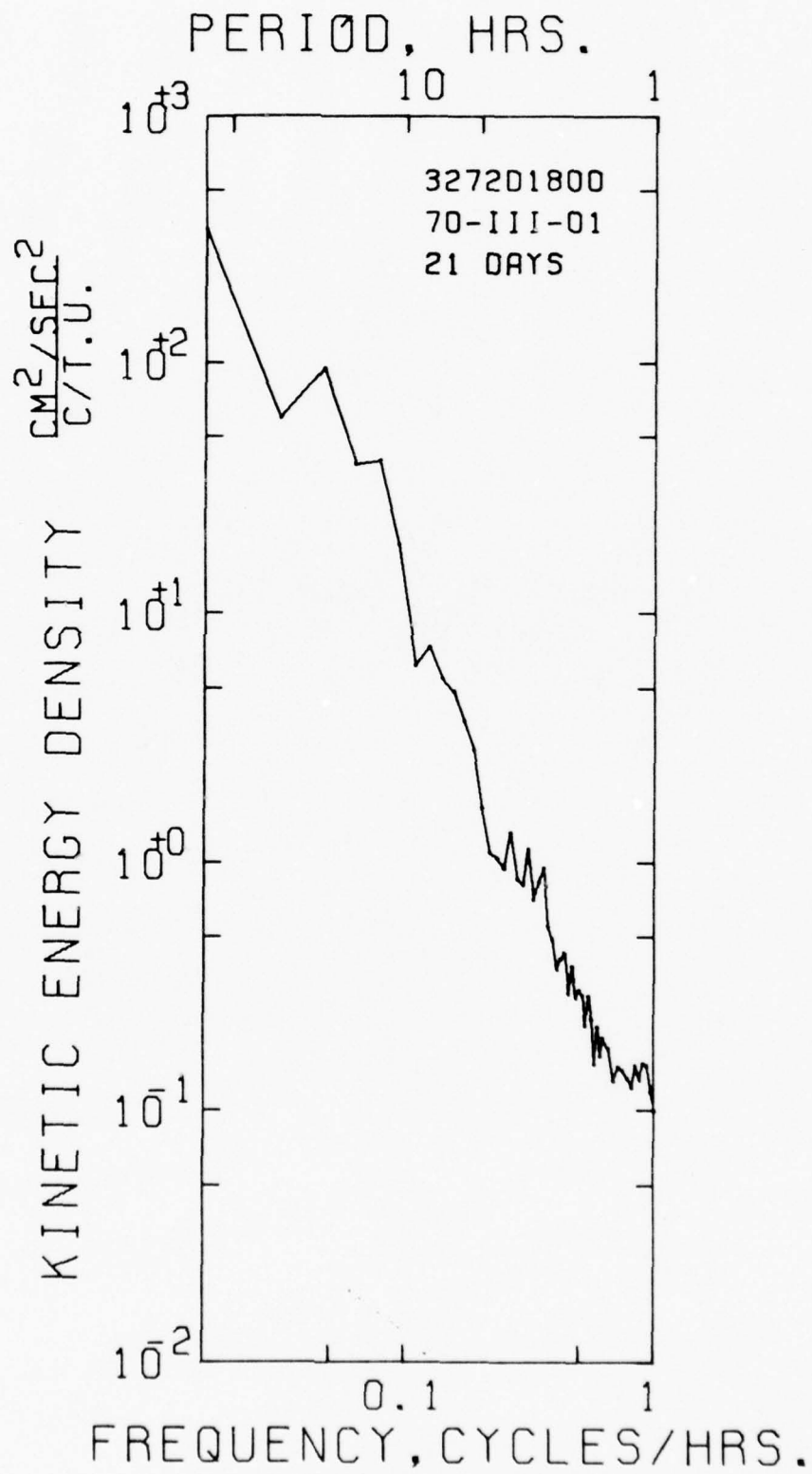
DATA/ 3272D1800

```
*****
VARIABLE *          EAST          NORTH          SPEED
UNITS    *          MM/SEC        MM/SEC        MM/SEC
*****
MEAN      *          31.977         -49.139         101.212
STD. ERR. *          2.136          1.896          1.347
VARIANCE  *         4896.891        3856.324        1946.609
STD. DEV. *          69.978         62.099         44.120
KURTOSIS  *          2.948          2.719          2.266
SKEWNESS  *          2.265          0.192           0.384
MINIMUM   *        -161.723        -188.311         18.000
MAXIMUM   *         206.617         114.464        229.000
```

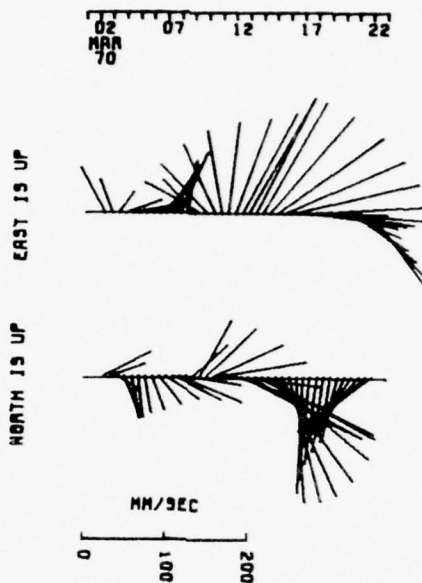
\*\*\*\*\*
EAST & NORTH

```
*****
COVARIANCE *          650.757
STD. ERR. OF COVARIANCE *          169.309
STD. DEV. OF COVARIANCE *         5545.995
CORRELATION COEFFICIENT *           0.150
VECTOR MEAN *          58.627
VECTOR VARIANCE *         4376.608
VECTOR STD. DEV. *          66.156
```

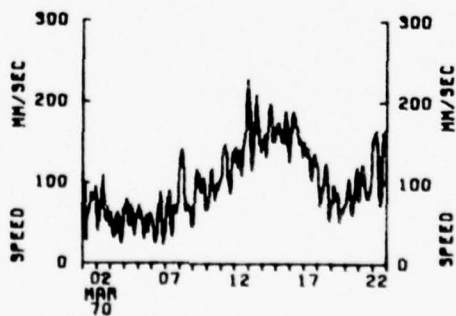
```
*****
* SAMPLE SIZE = 1073 PRINTS
*
* SPANNING RANGE
* FROM 70- III-01 00.00.34
* TO 70- III-23 08.00.34
*
* DURATION 22.33 DAYS
```







32720



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MOORING NO. 329  
Lat. 31° 00.0'N Long. 70° 29.3'W

Set March 3, 1970  
Set by A. Davidson  
Ship R. V. Chain Cruise 98  
Recovered July 5, 1970  
Recovered by R. Heinmiller  
Ship R. V. Knorr Cruise 5

Mooring type - Bottom

Purpose of mooring

N/S Array with moorings 326 and 327.

Data No.	Instr. Type	Depth (m)
3291*	Model 850	4247
Water depth		5424



GLASS FLOAT BUOY  
WITH LIGHT & RADIO  
1 m CHAIN  
10 m 9/16" NYLON

CURRENT METER 3291

10 m 9/16" NYLON

ACOUSTIC RELEASE,  
AMF TRANSPONDING

10 m 9/16" NYLON

50 m " "

100 m " "

500 m " "

500 m " "

3 m CHAIN  
800 LB ANCHOR

Comments

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Data number 3291

Instrument No.: M-223

Type: Model 850

Depth: 4247 m

Water depth: 5424 m

Start time: 70-III-04 00.30.17

Stop time: 70-VII-05 09.00.17

Duration: 123d 08h 30m

Sampling scheme: Interval

time between strobes = 5 seconds

no. of strobes per interval = 15

interval time = 1800 seconds

COMMENTS:

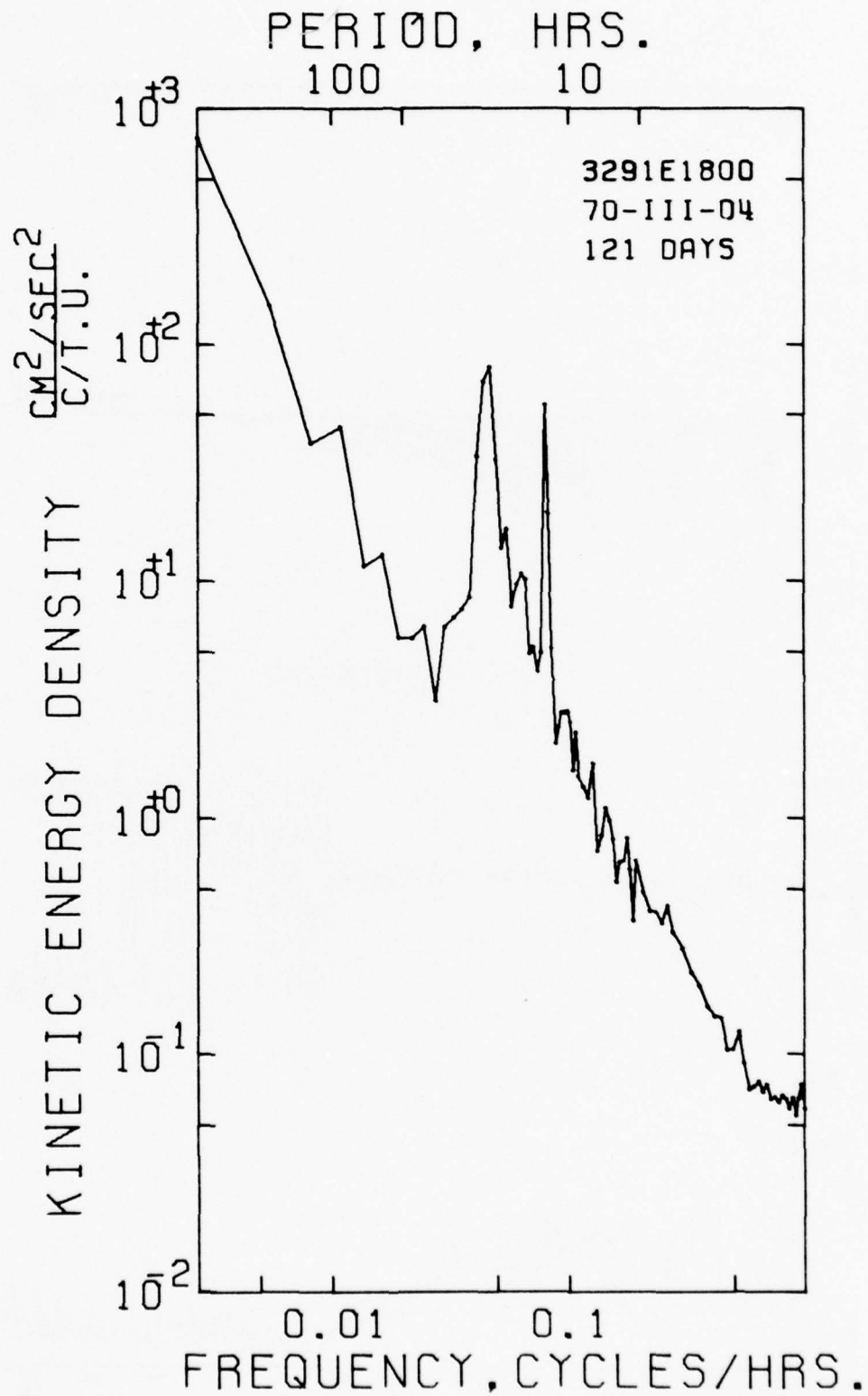
DATA/ 3291E1800

```
*****
VARIABLE *      EAST      NORTH      SPEED
UNITS    *      MM/SEC    MM/SEC    MM/SEC
*****
MEAN      *      14.776      3.338      49.689
STD. ERR. *          .306          .649      .367
VARIANCE  *      556.082     2492.551     798.048
STD. DEV. *      23.581      49.925     28.230
KURTOSIS  *          3.260          2.676      2.626
SKEWNESS  *          .359          .573E-1      .733
MINIMUM   *      93.956     130.571     12.000
MAXIMUM   *      62.455     131.561     136.000
```

\*\*\*\*\*
EAST & NORTH
\*\*\*\*\*

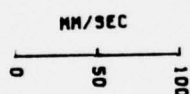
```
COVARIANCE      *      78.019
STD. ERR. OF COVARIANCE *      18.794
STD. DEV. OF COVARIANCE *     1446.295
CORRELATION COEFFICIENT *          .663E-1
VECTOR MEAN      *      14.780
VECTOR VARIANCE   *     1524.317
VECTOR STD. DEV.  *      39.042
```

```
*****
* SAMPLE SIZE * 3922 POINTS
*
* SPANNING RANGE
* FROM 70- III-04 00.30.1
* TO 70- VII-05 09.00.17
*
* DURATION 123.35 DAYS
```

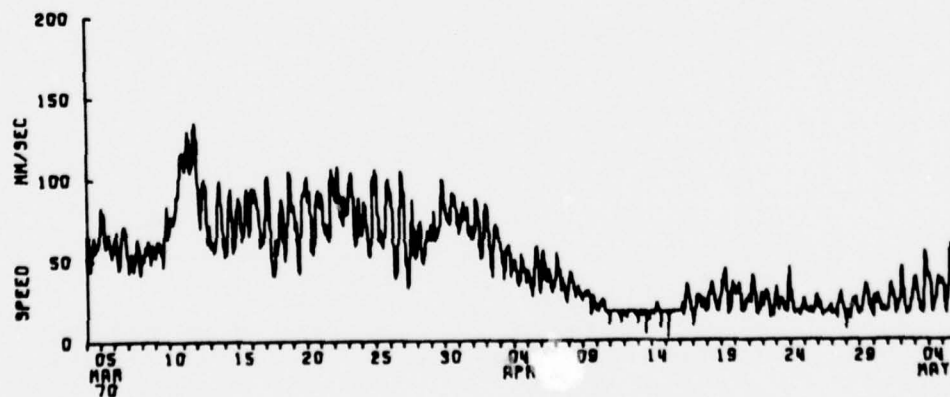




NORTH IS UP

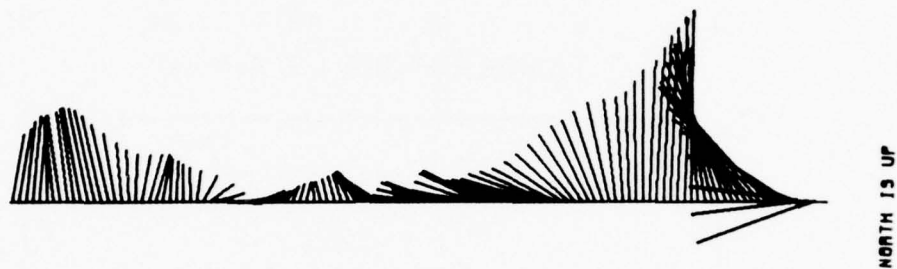


3291E



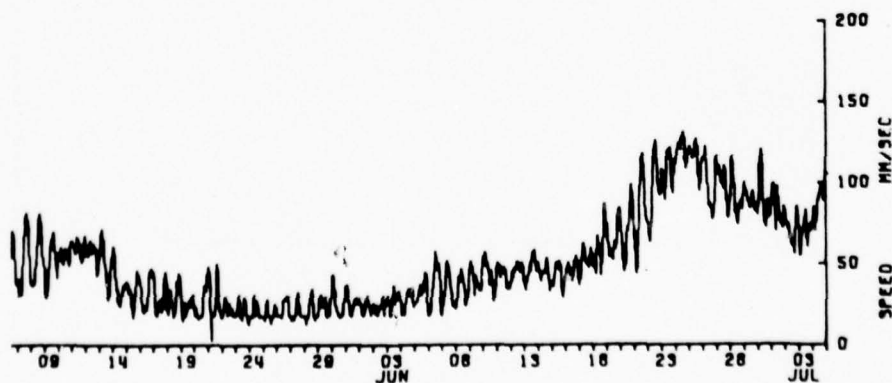
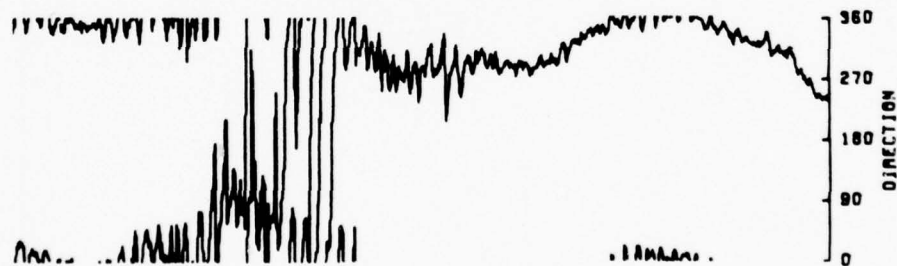


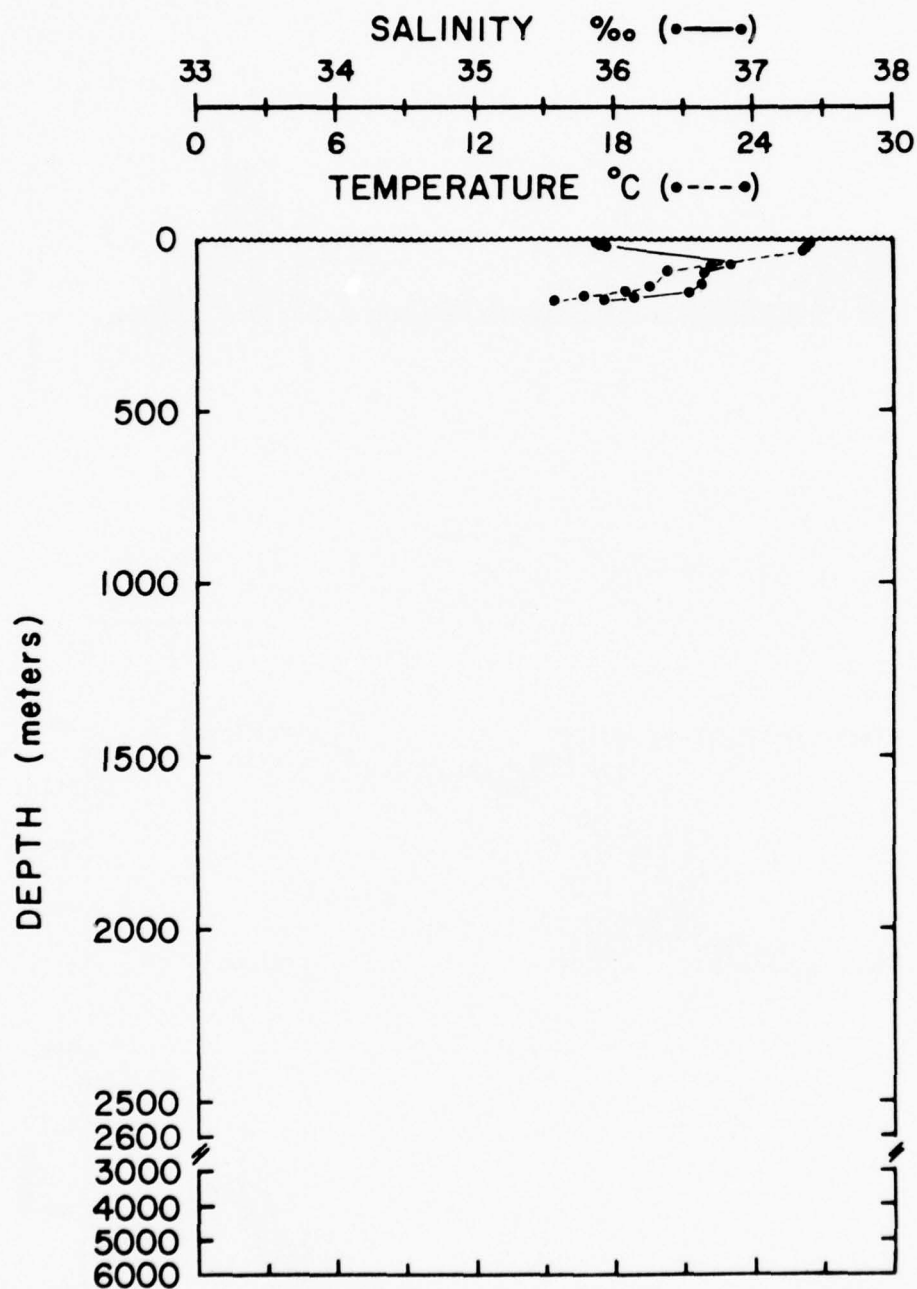
00 14 18 24 28 03 JUN 08 13 18 23 28 03 JUL



3291E

MM/SEC  
0 50 100





AN - 056 - 1654

LAT. 11° 29.6' N

LONG. 61° 45.1' W

DATE 70-03-12

MOORING NO. 331

Lat. 11° 32.2'N Long. 61° 54.2'W

Set March 12, 1970

Set by J. Gifford

Ship R. V. AII Cruise 56

Recovered April 18, 1970

Recovered by C. Simmons

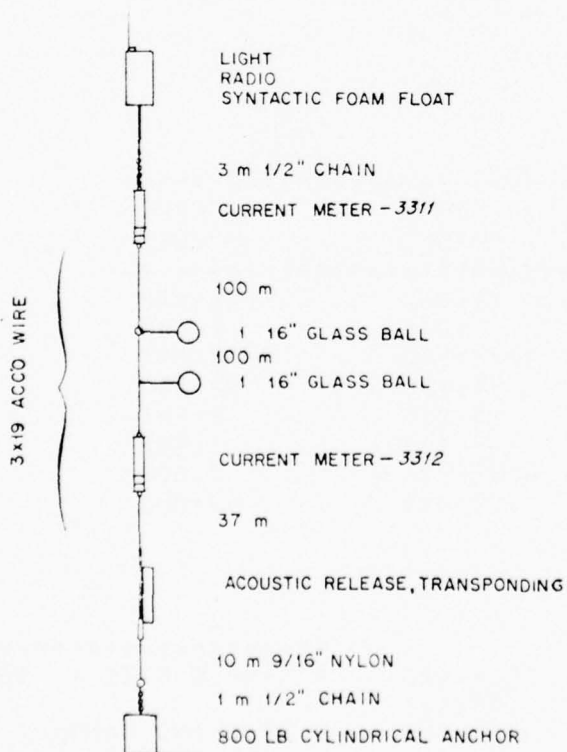
Ship R. V. AII Cruise 56

Mooring type - Subsurface

Purpose of mooring

Caribbean In Flow studies with  
mooring 332

Data No.	Instr. Type	Depth (m)
3311*	Model 850	224
3312*	Model 850	426
Water depth		477



Comments

See Stalcup and Metcalf (1972)  
for additional data information.

Data number 3311

Instrument No.: M-204

Type: Model 850

Depth: 224 m

Water depth: 477 m

Start time: 70-III-12 18.45.40

Stop time: 70-IV-18 17.00.40

Duration: 36d 22h 15m

Sampling scheme: Interval

time between strobes = 5 seconds

no. of strobes per interval = 16

interval time = 900 seconds

COMMENTS:

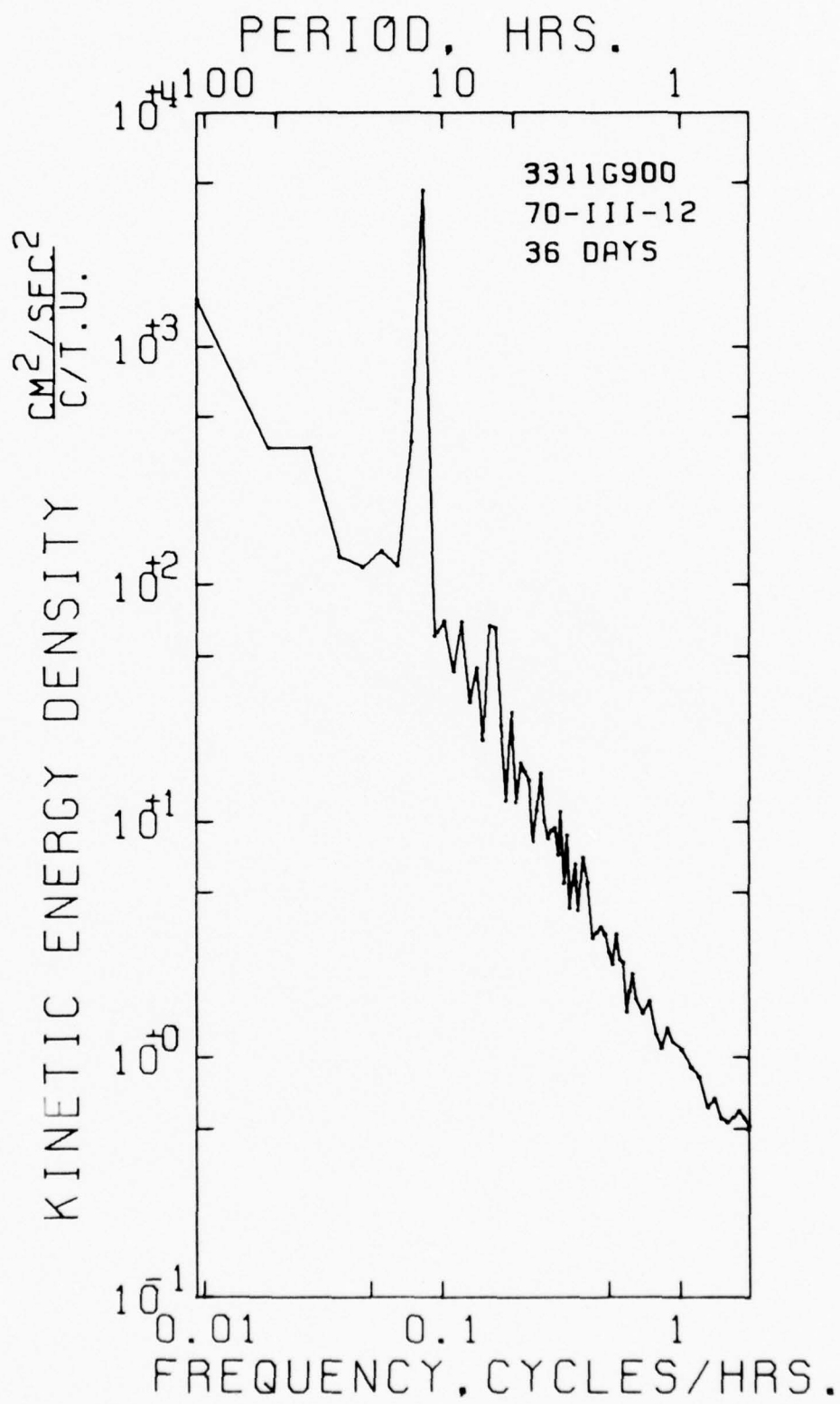
DATA/ 3311G900

```
*****
VARIABLE *      EAST      NORTH      SPEED
UNITS    *      MM/SEC    MM/SEC    MM/SEC
*****
MEAN      =      31.412      1.668      156.882
STD. ERR. =      2.878      .976      1.605
VARIANCE  =    29377.246    3377.960    9132.645
STD. DEV. =     171.398     58.120     95.565
KURTOSIS  =      2.594      3.215      2.501
SKEWNESS  =      -.271      -.172      .552
MINIMUM   =    -442.466    -197.711     9.000
MAXIMUM   =     404.512     197.835    443.000
```

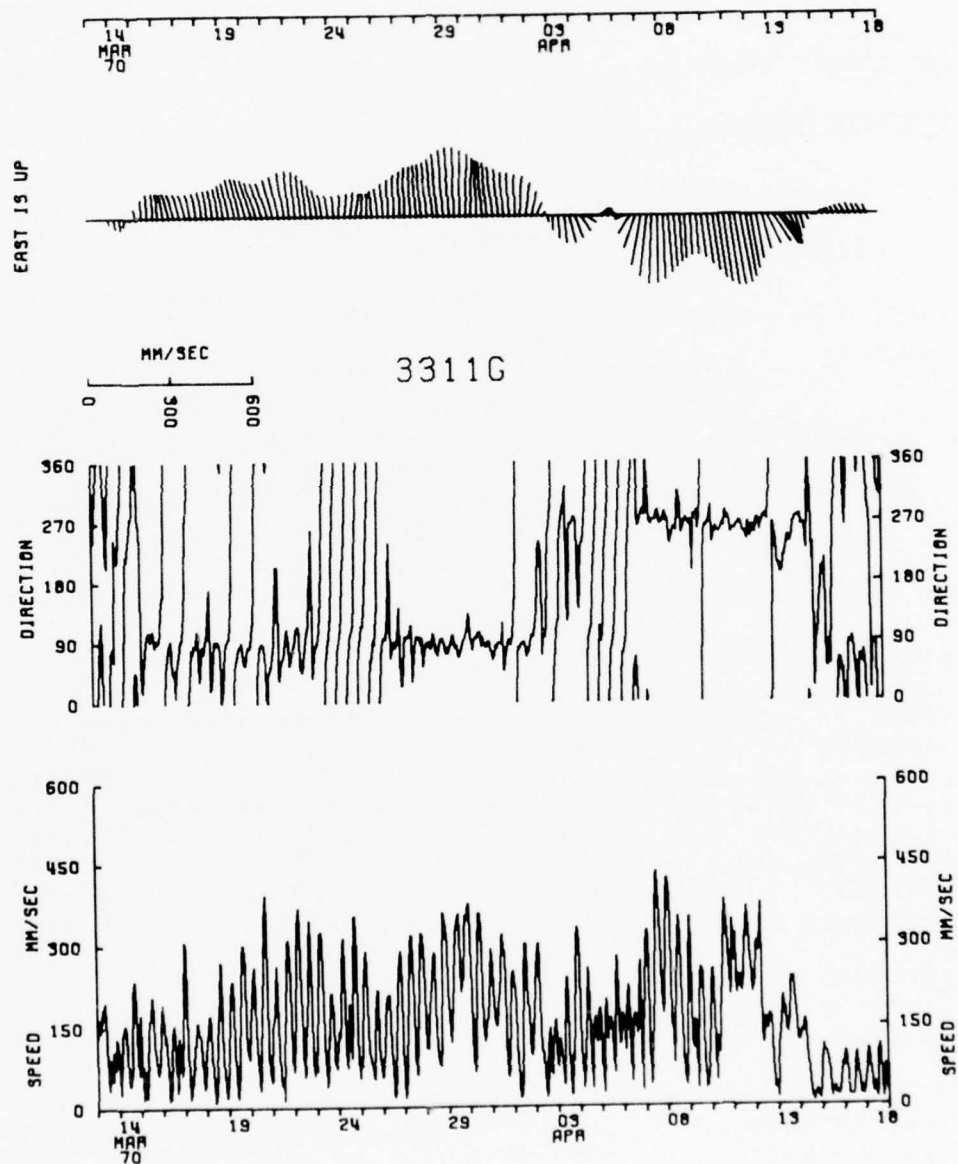
\*\*\*\*\*
EAST & NORTH
\*\*\*\*\*

```
COVARIANCE      =    2104.420
STD. ERR. OF COVARIANCE =    158.111
STD. DEV. OF COVARIANCE =    9415.222
CORRELATION COEFFICIENT =      .211
VECTOR MEAN      =      31.457
VECTOR VARIANCE   =    16377.603
VECTOR STD. DEV.  =    127.975
```

```
*****
* SAMPLE SIZE = 3546 PRINTS
*
* SPANNING RANGE
* FROM 70- III-12 18.45.40
* TO 70- IV -18 17.00.40
*
* DURATION 36.93 DAYS
```







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Data number 3312

Instrument No.: M-209

Type: Model 850

Depth: 426 m

Water depth: 477 m

Start time: 70-III-12 18.25.42

Stop time: 70-IV-18 17.25.42

Duration: 36d 23h

Sampling scheme: Interval

time between strobes = 5.27 seconds

no. of strobes per interval = 16

interval time = 900 seconds

COMMENTS:

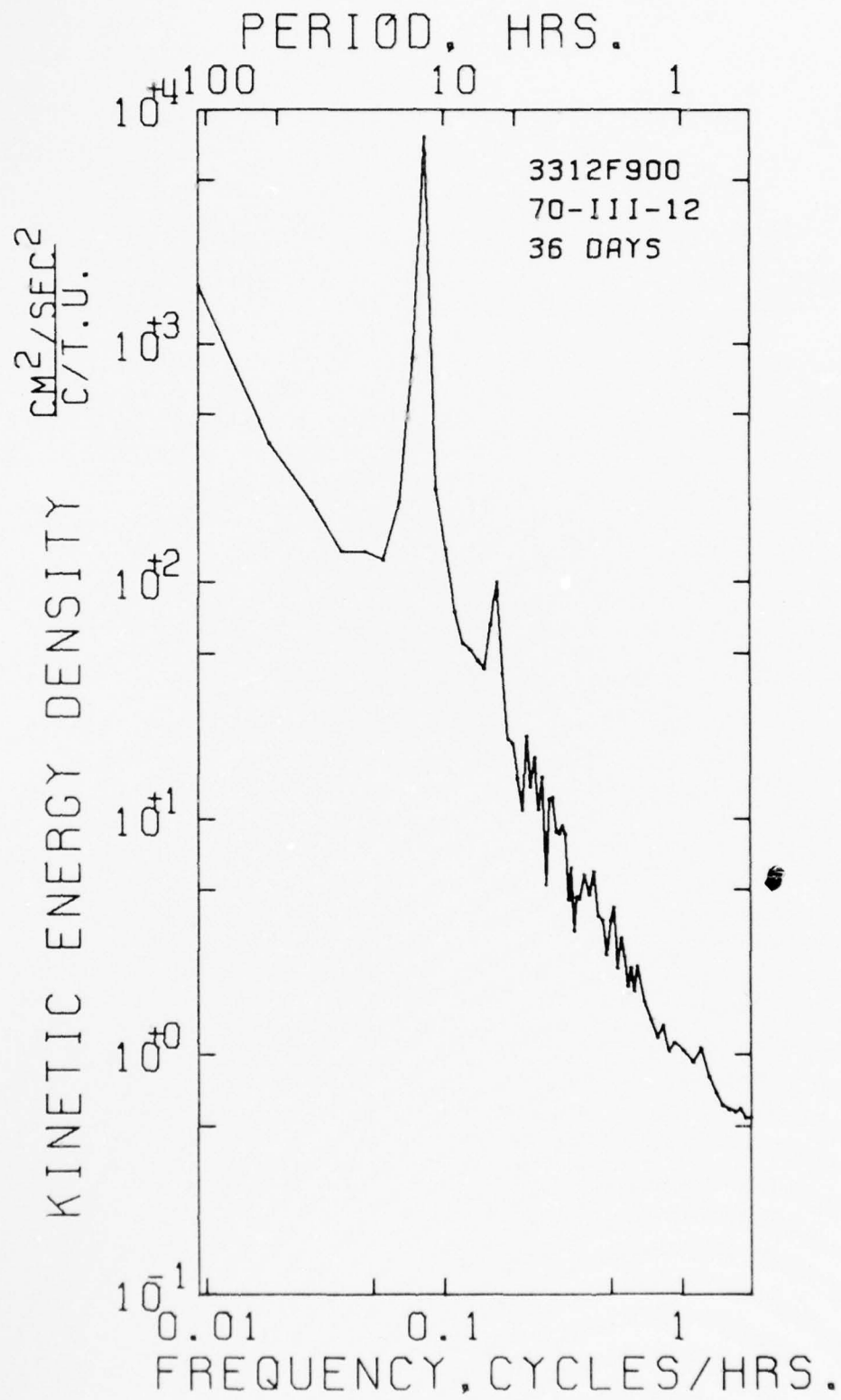
DATA/ 3312F900

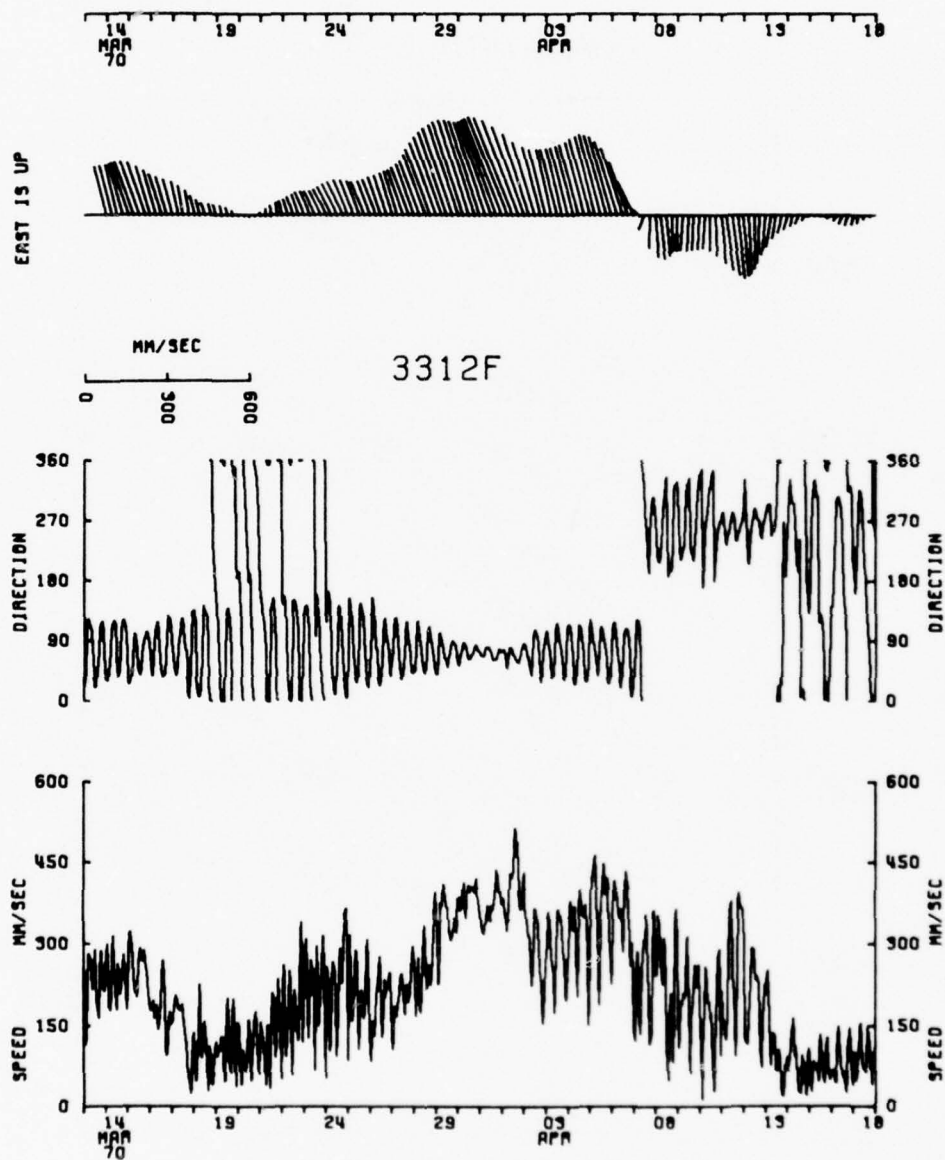
```
*****
VARIABLE *      EAST      NORTH      SPEED
UNITS    *      MM/SEC    MM/SEC    MM/SEC
*****
MEAN      *      97.859      40.795      216.482
STD. ERR. *      2.970      2.153      1.849
VARIANCE  *    31313.316    16449.271    12138.722
STD. DEV. *    175.956    128.255    110.176
KURTOSIS  *      2.666      2.486      2.151
SKEWNESS  *      2.260      2.117      2.228
MINIMUM   *    -426.000    -319.255    17.000
MAXIMUM   *      482.265      387.163    527.000
*****
```

\*\*\*\*\*
EAST & NORTH
\*\*\*\*\*

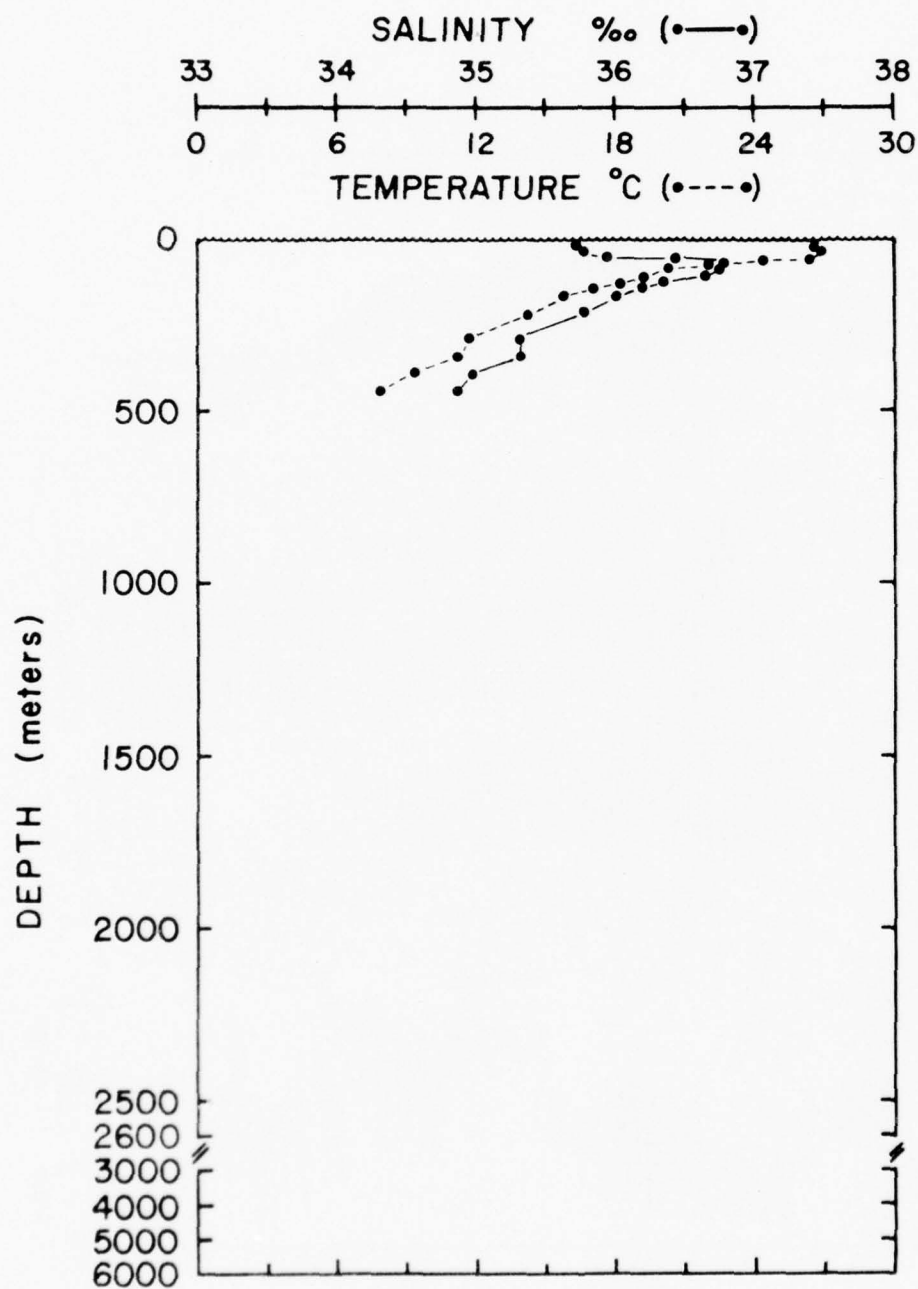
```
COVARIANCE      *    2831.522
STD. ERR. OF COVARIANCE *    424.221
STD. DEV. OF COVARIANCE *   25272.295
CORRELATION COEFFICIENT *      0.125
VECTOR MEAN      *    106.022
VECTOR VARIANCE   *   23881.293
VECTOR STD. DEV.  *    154.536
```

```
*****
* SAMPLE SIZE = 3549 PRINTS
*
* SPANNING RANGE
* FROM 70- III-12 18.25.42
* TO 70- IV -18 17.25.42
*
* DURATION 36.96 DAYS
*****
```





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AN 056 1655  
LAT. 11° 34.5' N  
LONG. 61° 46.0' W  
DATE 70-03-12

MOORING NO. 332  
 Lat. 11° 39.0'N Long. 61° 54.2W

Set March 12, 1970

Set by J. Gifford

Ship R. V. AII Cruise 56

Recovered April 18, 1970

Recovered by C. Simmons

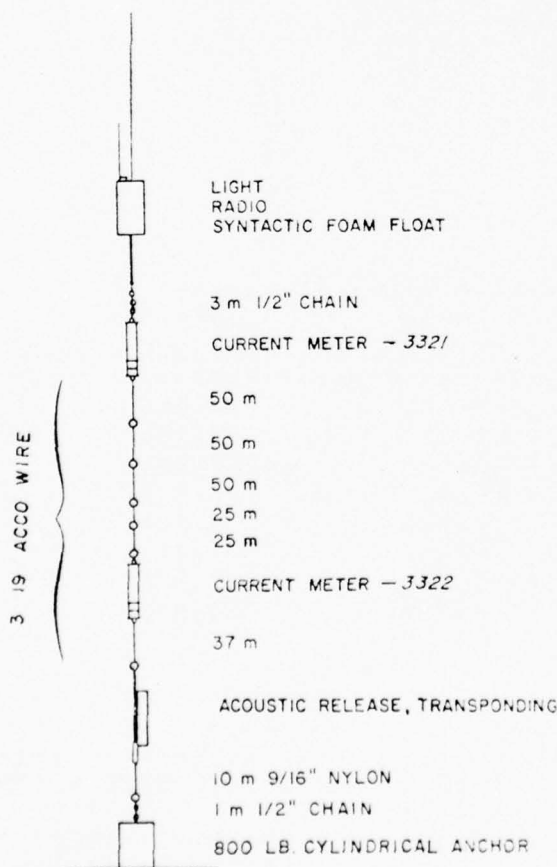
Ship R. V. AII Cruise 56

Mooring type - Subsurface

Purpose of mooring

Caribbean Inflow studies with  
 mooring 331.

Data No.	Instr. Type	Depth (m)
3321*	Model 850	422
3322*	Model 850	624
Water depth		675



#### Comments

See Stalcup and Metcalf (1972)

for additional data information.

Mooring 332 The oscillations of a non symmetrical subsurface syntactic foam float caused enough mooring motion to affect the data. Analysis of the current data from the meter directly under the float indicates that when the current speed exceeded 10 cm/sec the CM revolved 34 to 36 times before reversing direction of rotation. The rate of rotation was ~ 6 rpm (Stalcup, Metcalf, 1972). The rotation of the current meter caused small errors in direction and speed which have not been edited out of this data. See Spectra.



Data number 3321

Instrument No.: M-122

Type: Model 850

Depth: 422 m

Water depth: 675 m

Start time: 70-III-12 20.40.42

Stop time: 70-IV-18 14.40.42

Duration: 36d 18h

Sampling scheme: Interval

time between strobes = 5.27 seconds

no. of strobes per interval = 16

interval time = 900 seconds

COMMENTS:

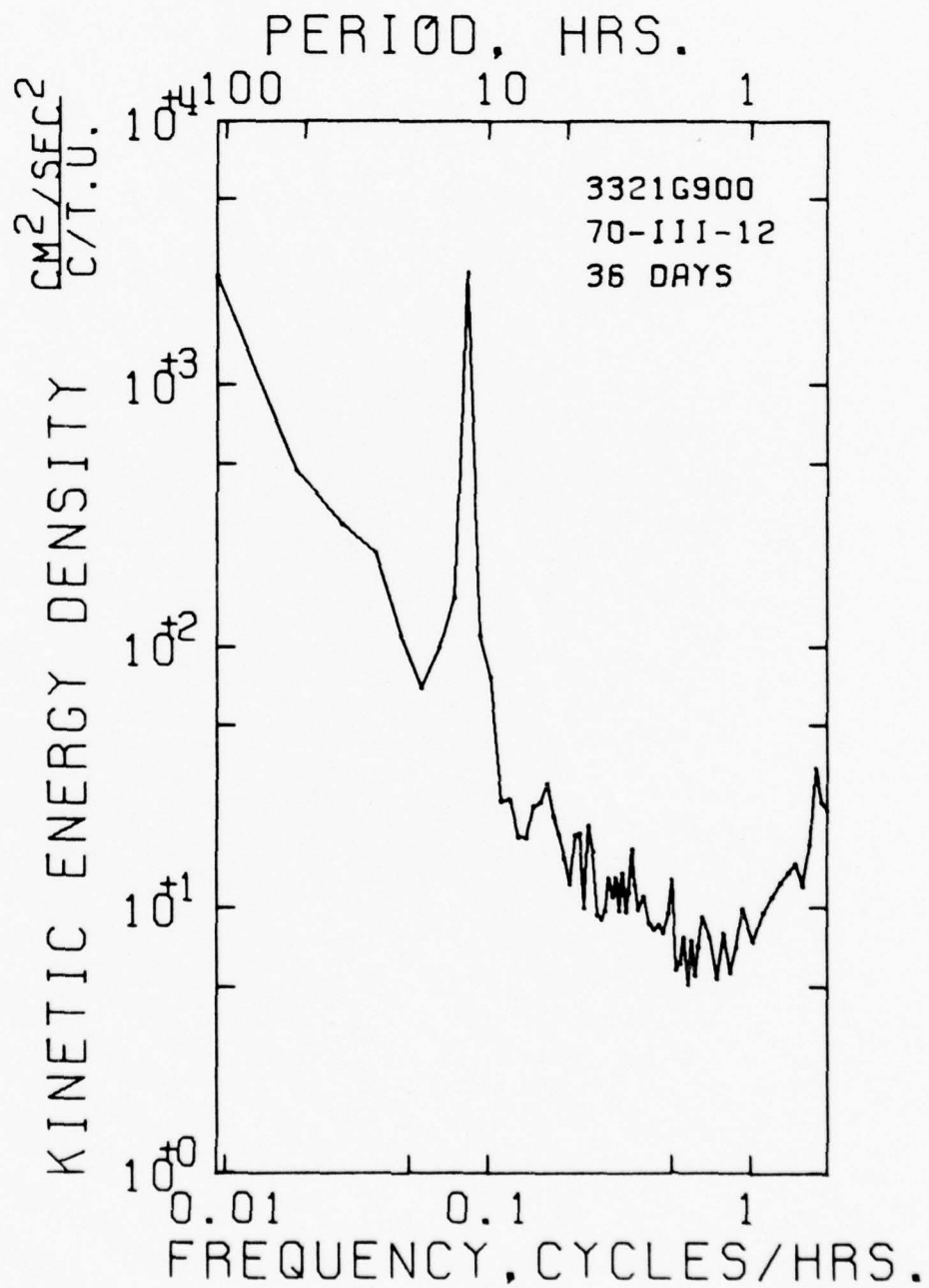
DATA/ 33210900

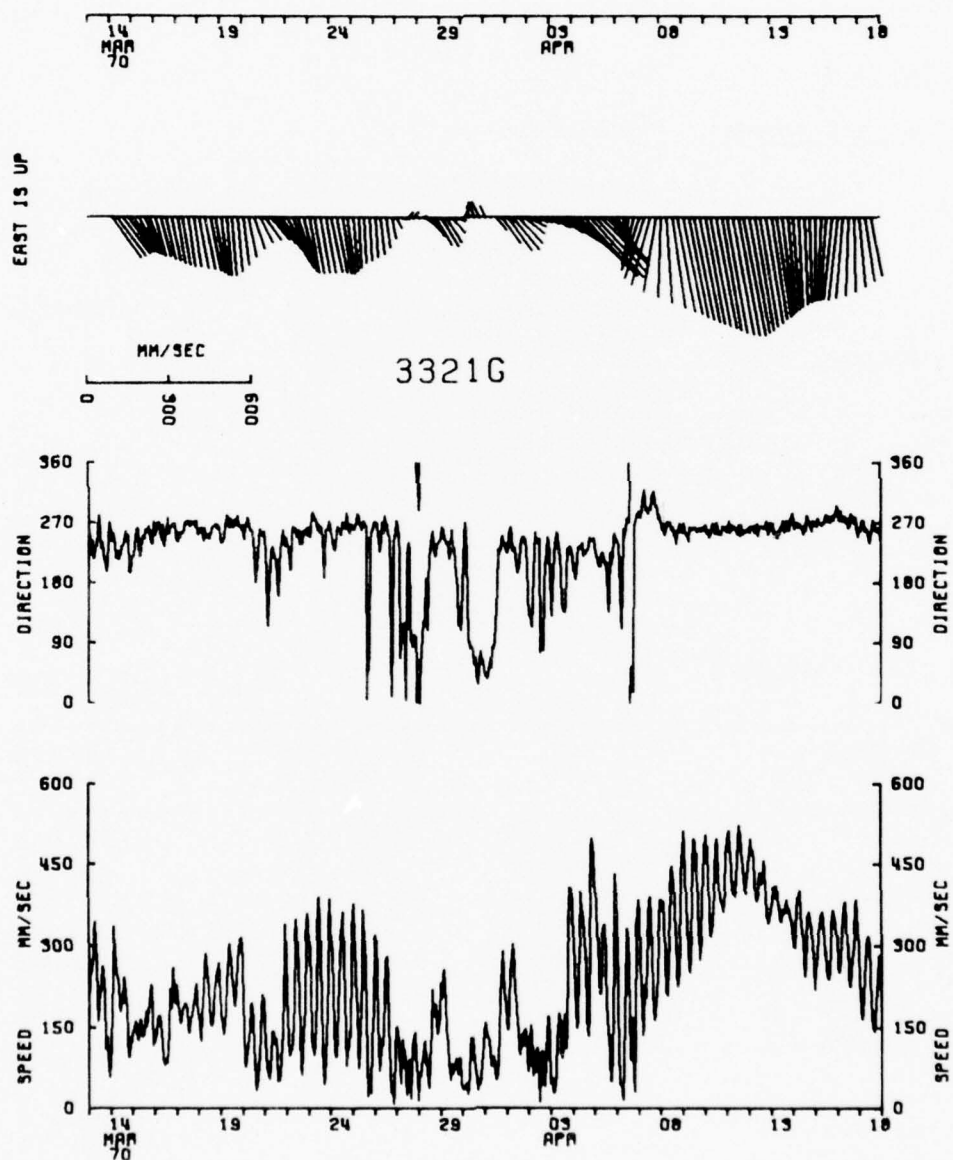
```
*****
VARIABLE *      EAST      NORTH      SPEED
UNITS    *      MM/SEC    MM/SEC    MM/SEC
*****
MEAN      *      -187.961    -48.031    228.519
STD. ERR. *          2.536      1.530      2.154
VARIANCE  *      22688.421    8265.522    16369.504
STD. DEV. *          150.627    90.915    127.943
KURTOSIS  *          2.443      4.083      2.324
SKEWNESS  *          .691E-2    -.406      .471
MINIMUM   *      -560.324    -449.171    17.000
MAXIMUM   *          180.030    294.155    563.000
*****
```

\*\*\*\*\*
EAST & NORTH
\*\*\*\*\*

```
COVARIANCE *          246.399
STD. ERR. OF COVARIANCE *          453.890
STD. DEV. OF COVARIANCE *      26963.525
CORRELATION COEFFICIENT *          .180E-1
VECTOR MEAN *          194.001
VECTOR VARIANCE *      15476.972
VECTOR STD. DEV. *          124.406
```

```
*****
* SAMPLE SIZE = 3529 PRINTS
*
* SPANNING RANGE
* FROM 70- III-12 20.40.42
* TO 70- IV -18 14.40.42
*
* DURATION 36.75 DAYS
*****
```





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Data number 3322

Instrument No.: M-215

Type: Model 850

Depth: 624 m

Water depth: 675 m

Start time: 70-III-12 21.13.40

Stop time: 70-IV-18 13.58.40

Duration: 36d 16h 45m

Sampling scheme: Interval

time between strobes = 5 seconds

no. of strobes per interval = 16

interval time = 900 seconds

COMMENTS:

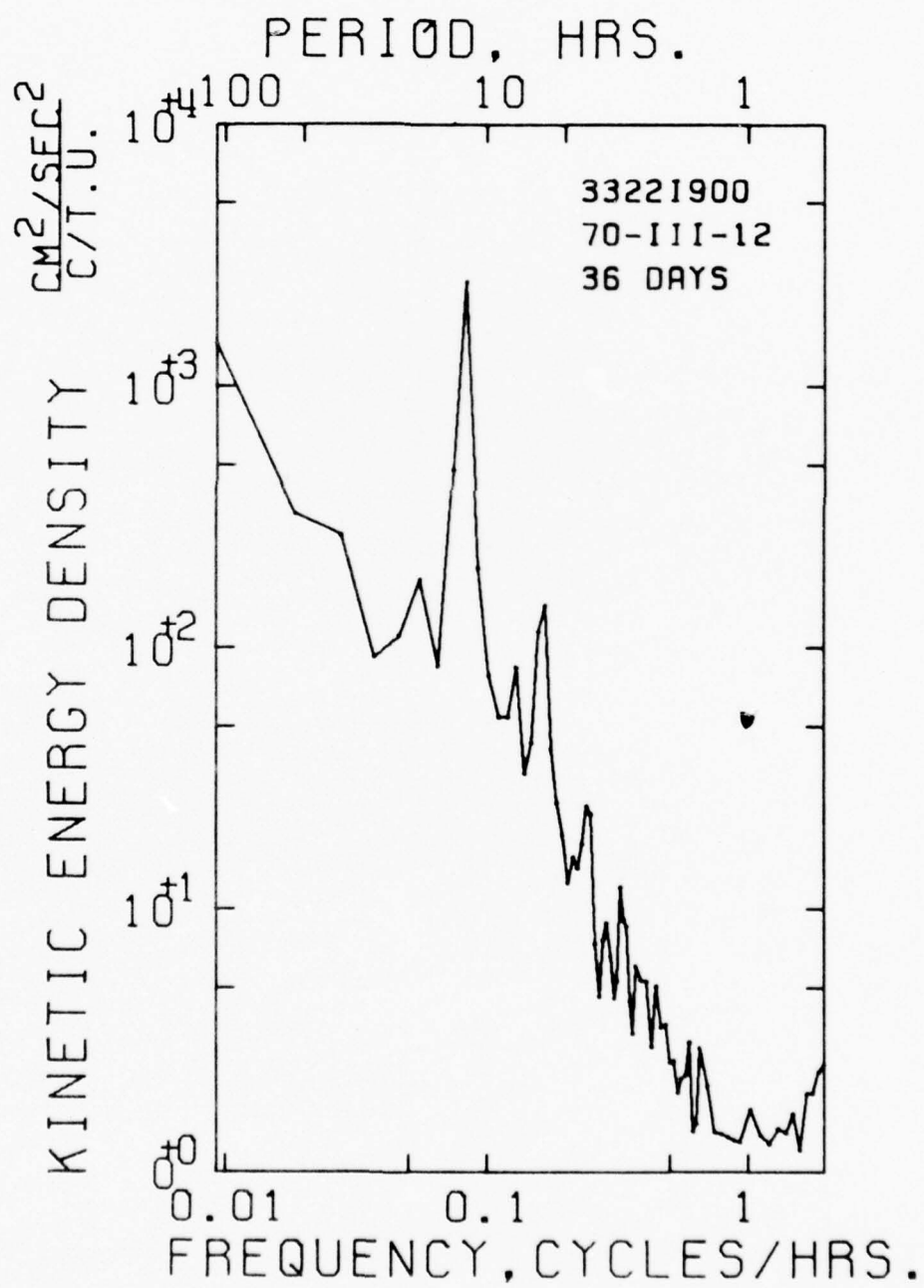
DATA/ 33221900

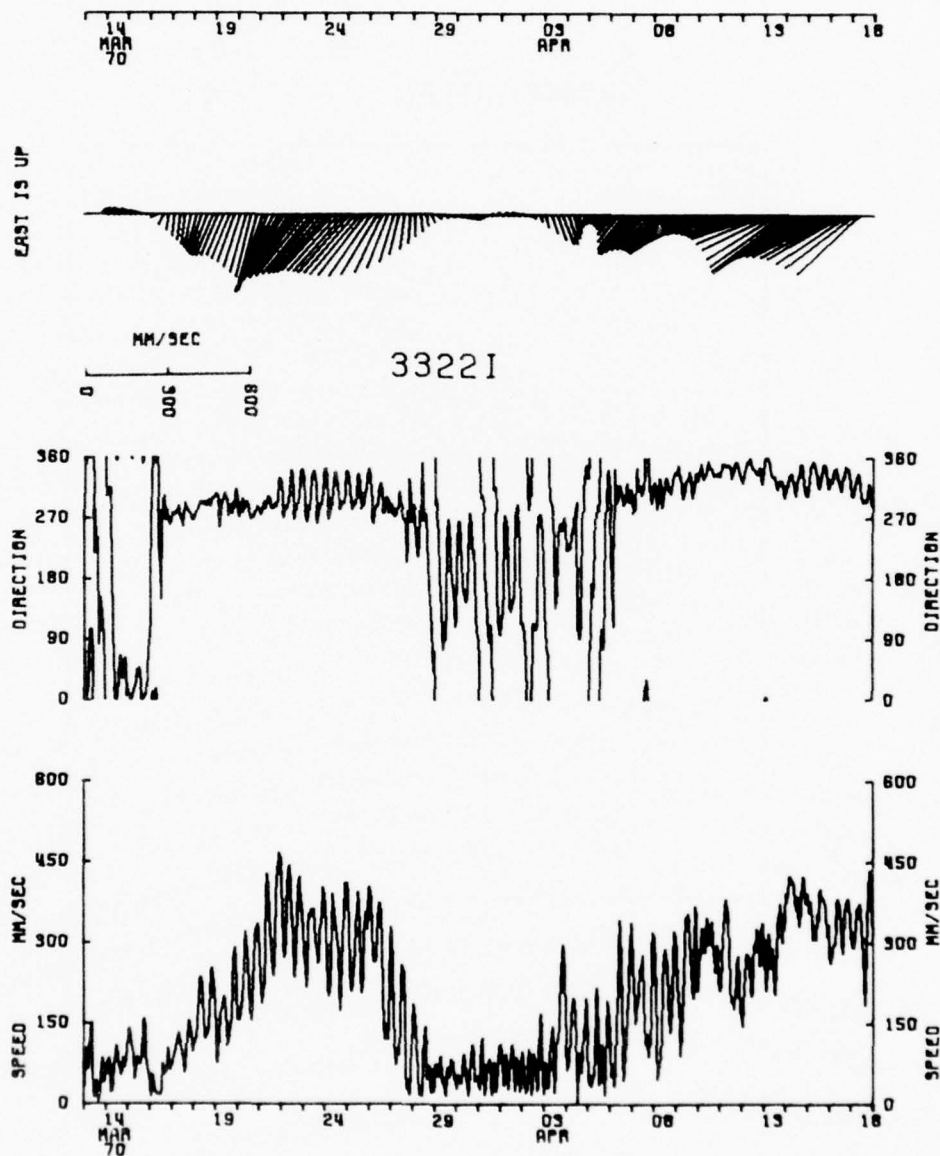
```
*****
VARIABLE *      EAST      NORTH      SPEED
UNITS    *      MM/SEC    MM/SEC    MM/SEC
*****
MEAN      *      -115.588    109.280    199.404
STD. ERR. *      1.907      2.177      2.066
VARIANCE  *      12810.348    16696.712    15047.886
STD. DEV. *      113.183    129.216    122.670
KURTOSIS  *      2.159      2.151      1.718
SKEWNESS  *      -.966E-1    .573      .182
MINIMUM   *      -409.353    -127.215    14.000
MAXIMUM   *      156.290     431.202    477.000
```

\*\*\*\*\*
EAST & NORTH

```
*****
COVARIANCE *      -5040.588
STD. ERR. OF COVARIANCE *      395.224
STD. DEV. OF COVARIANCE *      23461.812
CORRELATION COEFFICIENT *      .345
VECTOR MEAN *      159.069
VECTOR VARIANCE *      14753.530
VECTOR STD. DEV. *      121.464
```

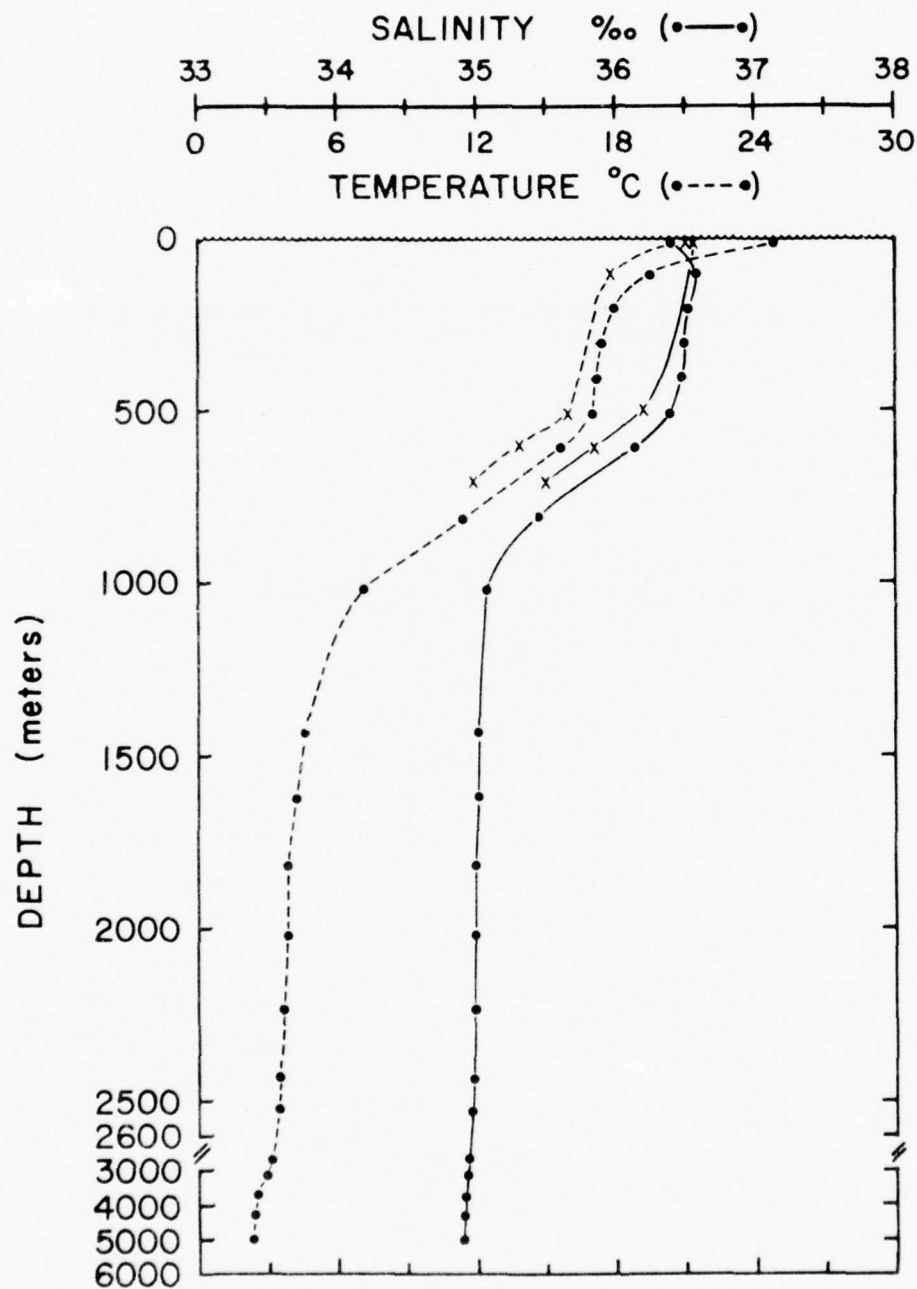
```
*****
* SAMPLE SIZE = 3524 POINTS
*
* SPANNING RANGE
* FROM 70- III-12 21.13.40
* TO 70- IV -18 13.58.40
*
* DURATION 36.70 DAYS
```





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AN-057-1726 (x) KN-005-006 (•)

LAT. 33° 57.5' N

LAT. 33° 55.0' N

LONG. 69° 56.5' W

LONG. 69° 51.0' W

DATE 70-05-15

DATE 70-07-6

MOORING NO. 334

Lat. 33° 58.0'N Long. 69° 56.0'W

LIGHT  
RADIO

TENSIO METER,  
TELEMETERING - 3341

10 m CHAIN

CURRENT METER - 3342

TENSIO METER - 3343

SWIVEL

500 m

500 m

CURRENT METER - 3344

500 m

500 m

CURRENT METER - 3345

500 m

525 m

517 m

531 m

CURRENT METER - 3346

518 m

283 m

TENSIO METER - 3347

85 m 3/4" NYLON WITH 39 GLASS  
SPHERES EQUALLY SPACED  
BIOLOGY PACKAGE - 3348

ACOUSTIC RELEASE,  
TRANSPONDING

15 m 3/4" NYLON

15 m CHAIN

2 STIMSON ANCHORS TOTTALLING 5,700 LBS

Set May 14, 1970

Set by J. Gifford

Ship R. V. AII Cruise 57

Recovered July 6, 1970

Recovered by R. Heinmiller

Ship R. V. Knorr Cruise 5

Mooring type - Surface

Purpose of mooring

- A) Current measurements at Site L
- B) Engineering evaluation of  
mooring components

Data No.	Instr. Type	Depth (m)
3341	Tel. Tens.	2
3342*	Model 850	14
3343	Tens.	15
3344*	Model 850	1017
3345*	Model 850	2019
3346*	Model 850	4326
3347	Tens.	5233
3348	Biopack	5328

Water depth 5370

#### Comments

The biology package for Drs. Eimhjellen and Jannasch contained radioactive material. At recovery the package was removed from the mooring line and taken to the R. V. Gosnold by ship's Zodiac so that the R. V. Knorr could keep her 'clean' ship status.

3 x 19 ACCO WIRE ROPE

5/8" NYLON

3 FT CHAIN WITH  
65 LB DANFORTH

Data number 3342

Instrument No.: M-238

Type: Model 850

Depth: 14 m

Water depth: 5370 m

Start time: 70-V-14 21.15.55

Stop time: 70-VII-06 06.30.55

Duration: 52d 11h 15m

Sampling scheme: Interval

time between strobes = 5.27 seconds

no. of strobes per interval = 23

interval time = 900 seconds

COMMENTS:

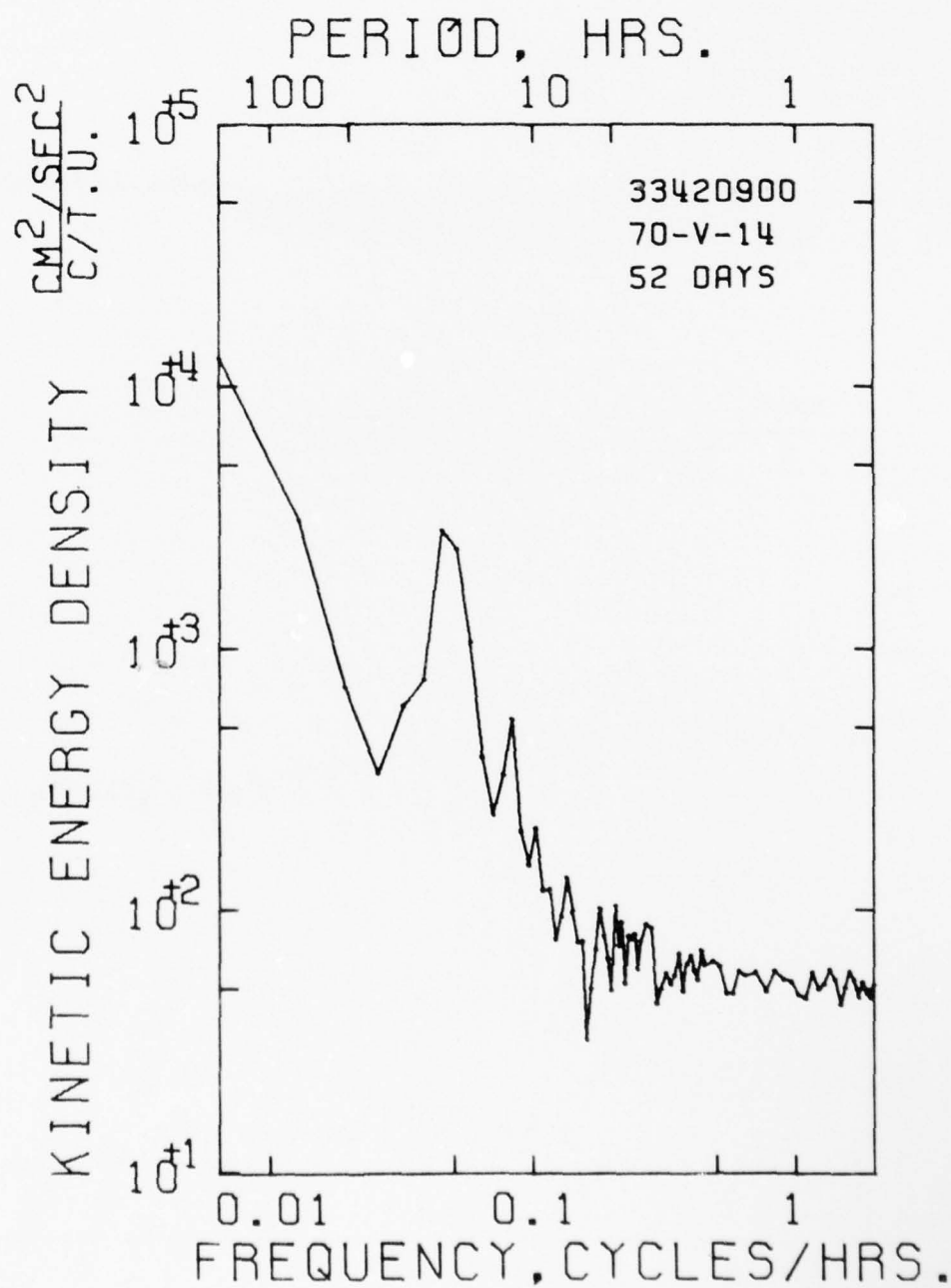
DATA/ 3342D900

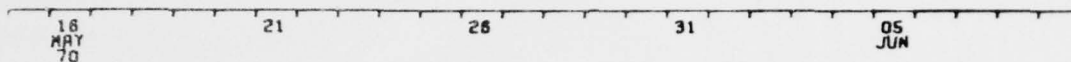
```
*****
VARIABLE *      EAST      NORTH      SPEED
UNITS    *      MM/SEC    MM/SEC      MM/SEC
*****
MEAN      *      258.231    -88.193    409.646
STD. ERR. *      3.114      3.901      2.521
VARIANCE  *    48762.117    76553.200    31966.637
STD. DEV. *    220.821     276.682    178.792
KURTOSIS  *      3.148      2.485      3.781
SKEWNESS  *      .314E-1    .192        .633
MINIMUM   *    -527.171    -970.273     4.000
MAXIMUM   *     953.387     530.607    1208.000
```

\*\*\*\*\*
EAST & NORTH
\*\*\*\*\*

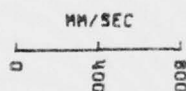
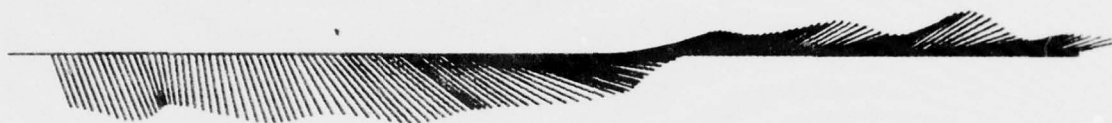
```
COVARIANCE *      3487.628
STD. ERR. OF COVARIANCE *      1362.304
STD. DEV. OF COVARIANCE *    96618.009
CORRELATION COEFFICIENT *      .571E-1
VECTOR MEAN *      272.876
VECTOR VARIANCE *    62657.659
VECTOR STD. DEV. *      250.315
```

```
*****
* SAMPLE SIZE * 3030 PRINTS
*
* SPANNING RANGE
* FROM 70-V-14 21.15.55
* TO 70-VII-06 06.30.55
*
* DURATION 52.39 DAYS
```

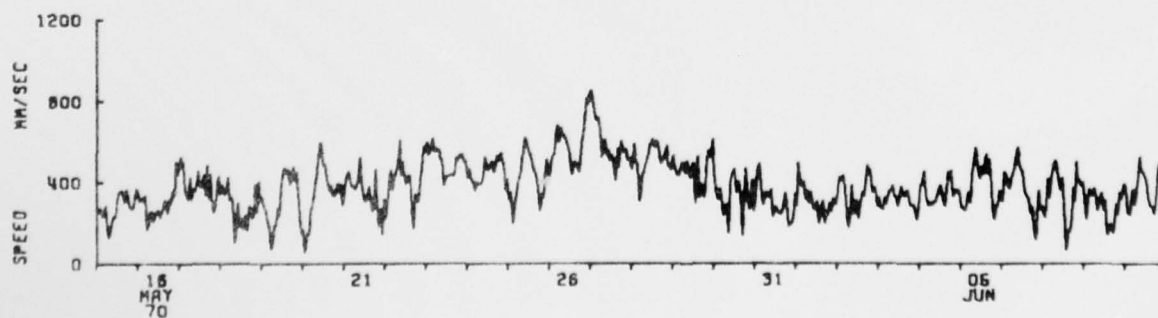
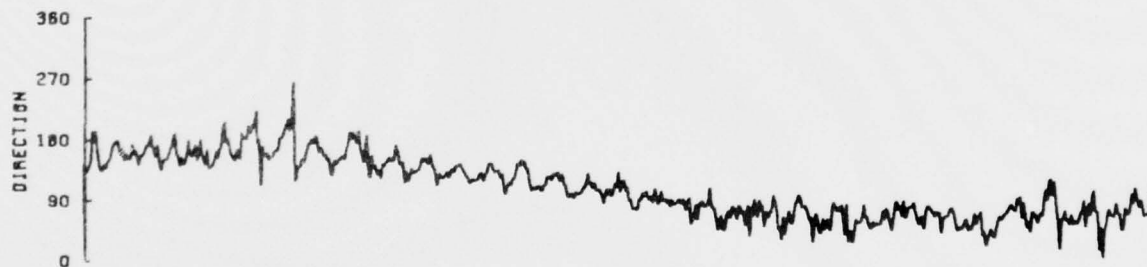




NORTH IS UP



33420

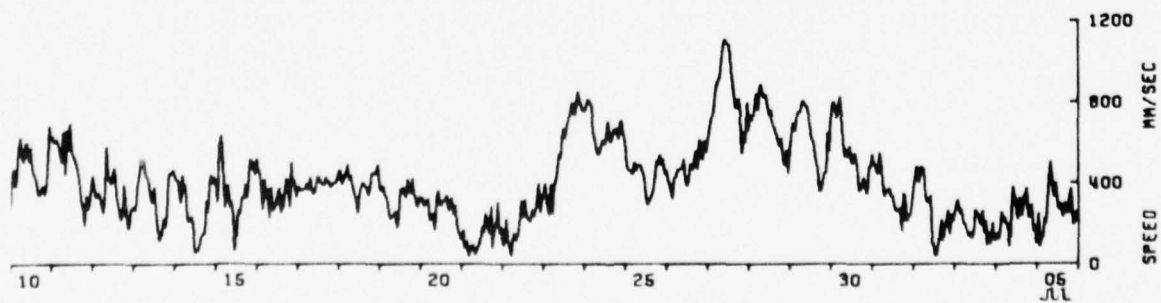


10 15 20 25 30 05 JUL



33420

MM/SEC  
0 400 800





Data number 3344

Instrument No.: M-122

Type: Model 850

Depth: 1017 m

Water depth: 5370 m

Start time: 70-V-14 21.00.55

Stop time: 70-VI-26 09.00.55

Duration: 42d 12h

Sampling scheme: Interval

time between strobes = 5.27 seconds

no. of strobes per interval = 24

interval time = 900 seconds

COMMENTS:

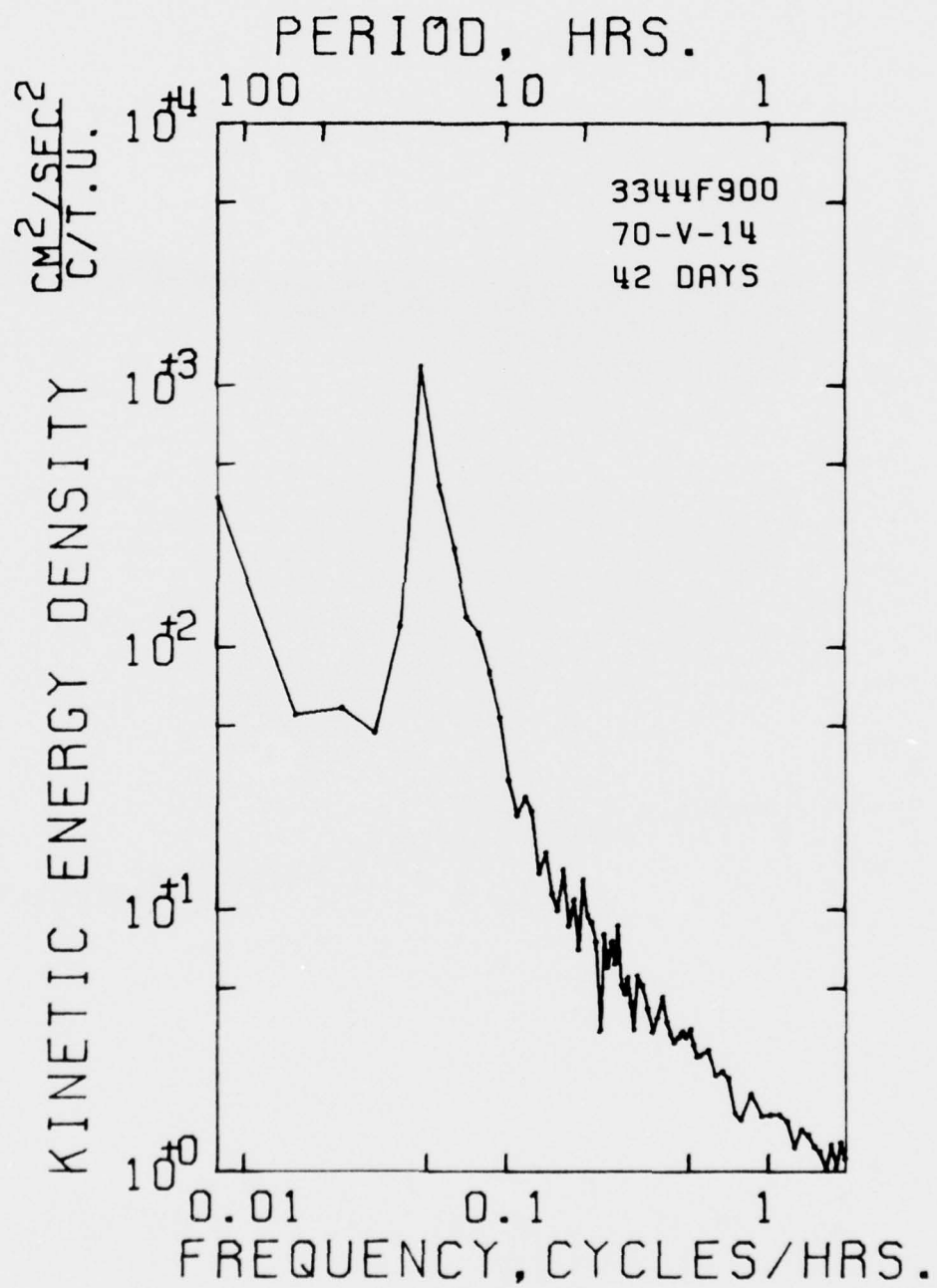
DATA/ 3344F900

```
*****
VARIABLE *      EAST      NORTH      SPEED
UNITS    *      MM/SEC    MM/SEC    MM/SEC
*****
MEAN      *      51.184      12.424      124.543
STD. ERR. *      1.264      1.358      .567
VARIANCE  *    6517.544    7529.324    1310.159
STD. DEV. *      80.731      86.772      36.196
KURTOSIS  *      2.428      2.086      2.819
SKEWNESS  *      -.566      -.102E-1    -.864E-1
MINIMUM   *    -173.244    -217.111      9.000
MAXIMUM   *     215.640      209.984     235.000
```

\*\*\*\*\*
EAST & NORTH
\*\*\*\*\*

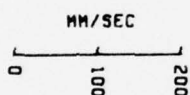
```
COVARIANCE *      1497.300
STD. ERR. OF COVARIANCE *      103.121
STD. DEV. OF COVARIANCE *     6587.664
CORRELATION COEFFICIENT *      .214
VECTOR MEAN *      52.671
VECTOR VARIANCE *     7023.434
VECTOR STD. DEV. *      83.806
```

```
*****
* SAMPLE SIZE = 4081 POINTS
*
* SPANNING RANGE
* FROM 70- V =14 21.00.55
* TO 70- VI =26 09.00.55
*
* DURATION 42.50 DAYS
```

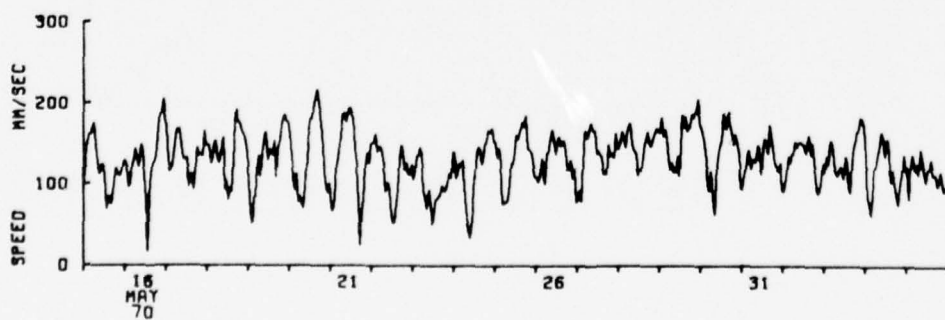




NORTH IS UP



3344F

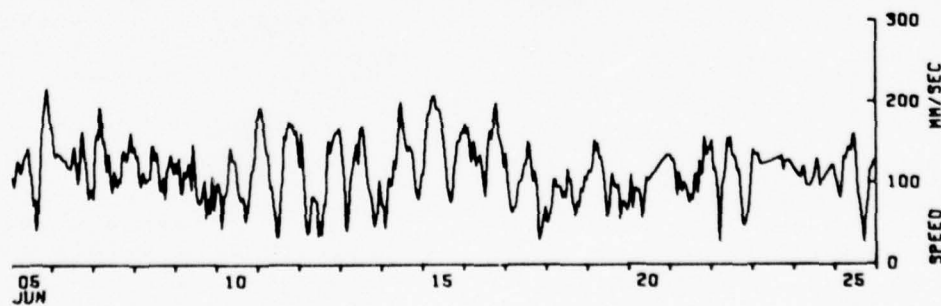
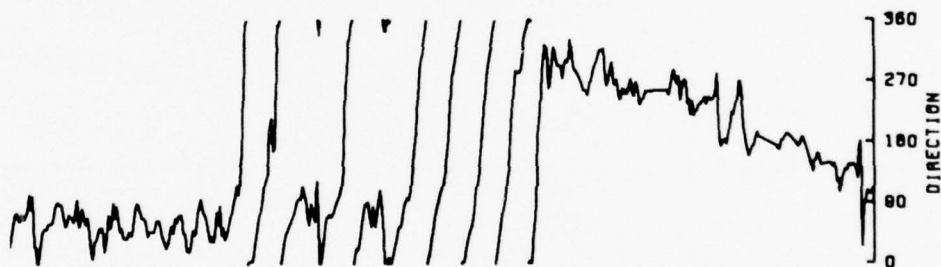


05 JUN 10 15 20 25



3344F

MM/SEC  
0 100 200



Data number 3345

Instrument No.: M-191

Type: Model 850

Depth: 2019 m

Water depth: 5370 m

Start time: 70-V-14 21.00.55

Stop time: 70-VI-08 07.45.55

Duration: 52d 10h 45m

Sampling scheme: Interval

time between strobes = 5.27seconds

no. of strobes per interval = 24

interval time = 900 seconds

COMMENTS:

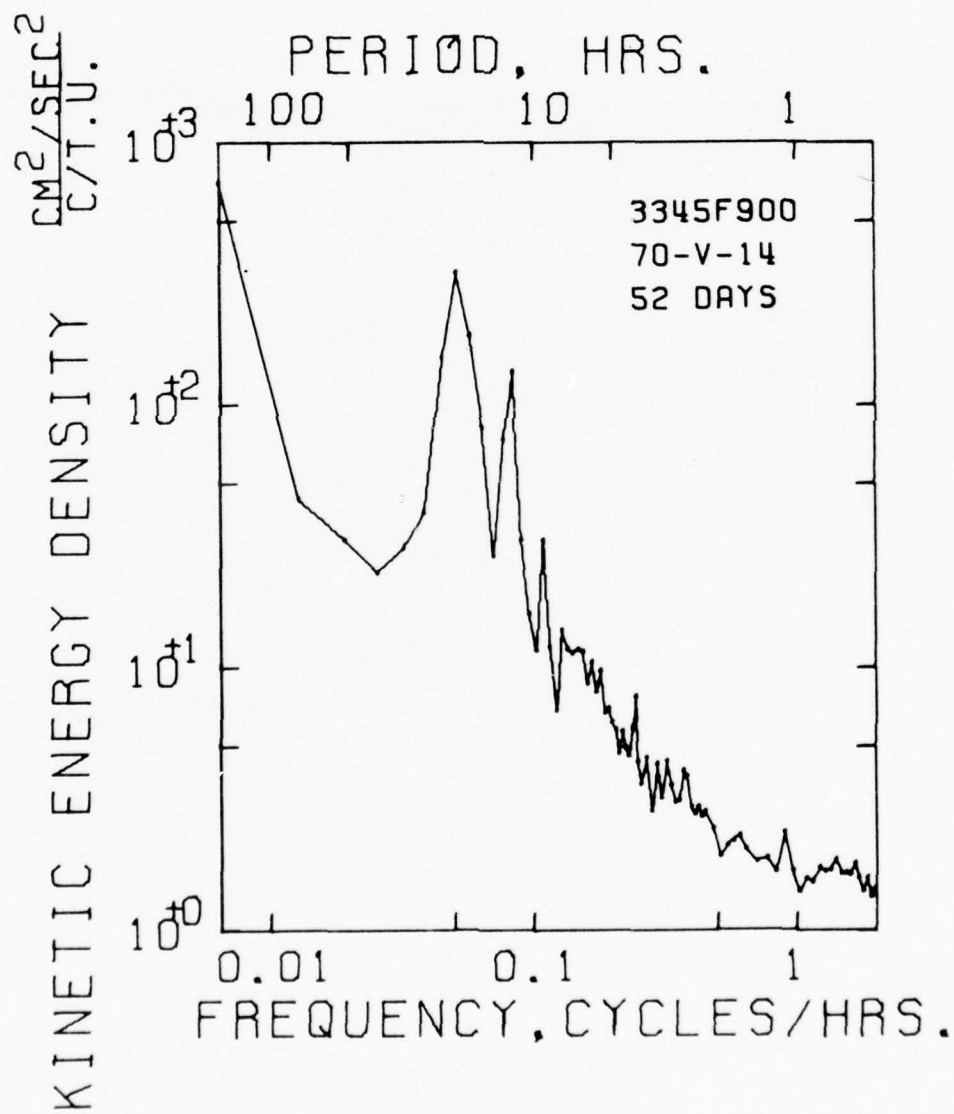
DATA/ 3345F900

```
*****
VARIABLE *      EAST      NORTH      SPEED
UNITS    *      MM/SEC    MM/SEC    MM/SEC
*****
MEAN      *      18.633     -27.865     107.431
STD. ERR. *      1.007      1.143       .502
VARIANCE  *    5105.368     6583.692    1271.412
STD. DEV. *      71.452      81.140      35.657
KURTOSIS  *      2.401      1.708       2.786
SKEWNESS  *      -.376      -.535E-2     -.283
MINIMUM   *    -193.215     -195.764      3.000
MAXIMUM   *     164.772      156.811     202.000
```

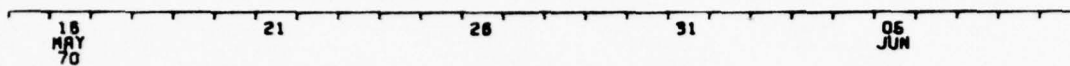
\*\*\*\*\*
EAST & NORTH
\*\*\*\*\*

```
COVARIANCE      *    1473.713
STD. ERR. OF COVARIANCE *    70.237
STD. DEV. OF COVARIANCE *   4984.378
CORRELATION COEFFICIENT *      .254
VECTOR MEAN      *    33.521
VECTOR VARIANCE   *   5844.530
VECTOR STD. DEV.  *    76.450
```

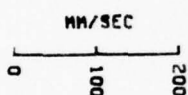
```
*****
* SAMPLE SIZE = 5036 POINTS
*
* SPANNING RANGE
* FROM 70-V-14 21.00.55
* TO 70-VII-06 07.45.55
*
* DURATION 52.45 DAYS
```



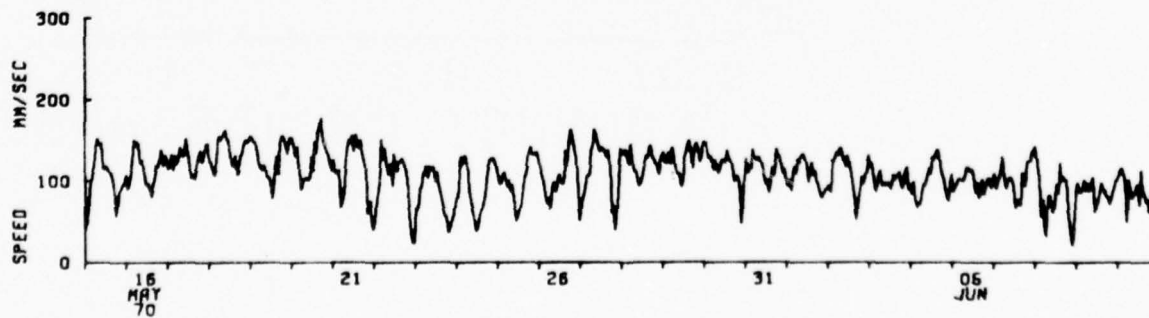


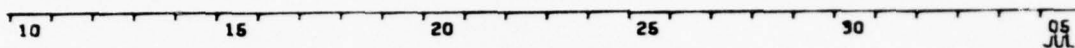


NORTH IS UP



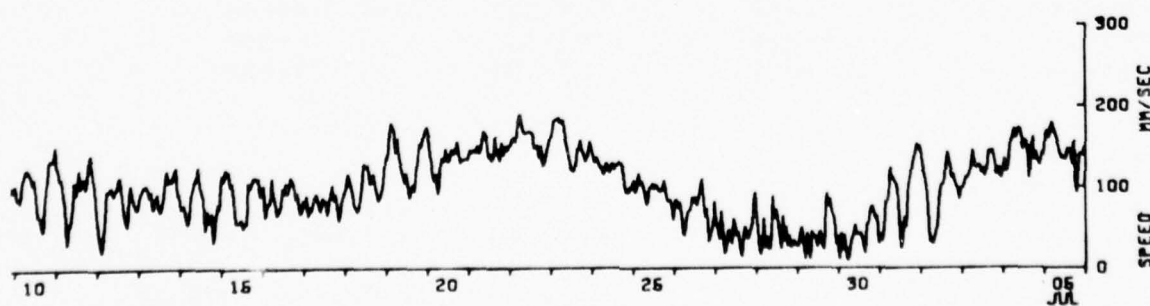
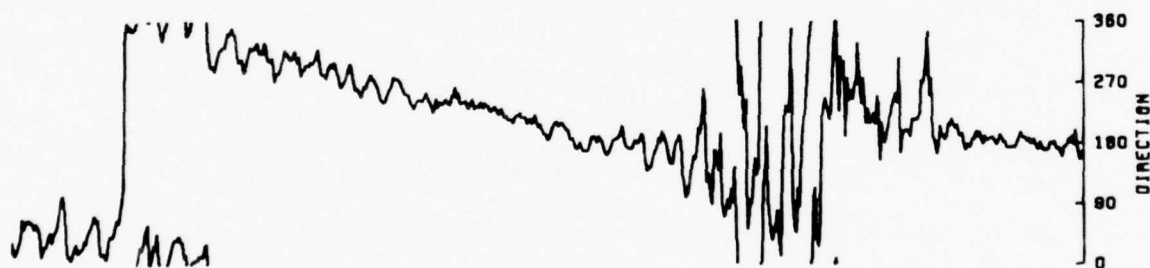
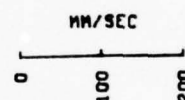
3345F





NORTH IS UP

3345F



Data number 3346

Instrument No.: M-240

Type: Model 850

Depth: 4326 m

Water depth: 5370 m

Start time: 70-V-14 21.00.55

Stop time: 70-VI-08 04.45.55

Duration: 24d 7h 45m

Sampling scheme: Interval

time between strobes = 5.27 seconds

no. of strobes per interval = 23

interval time = 900 seconds

COMMENTS:

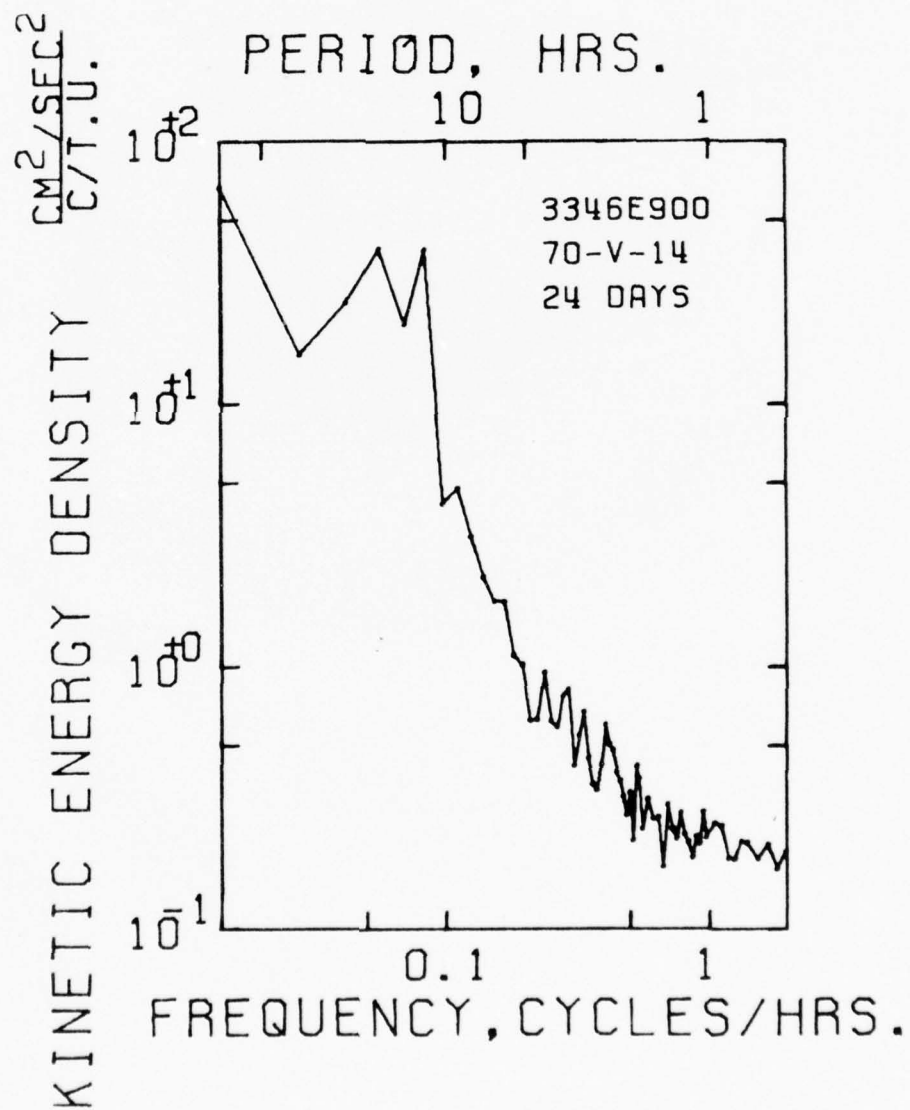
DATA/ 3346E900

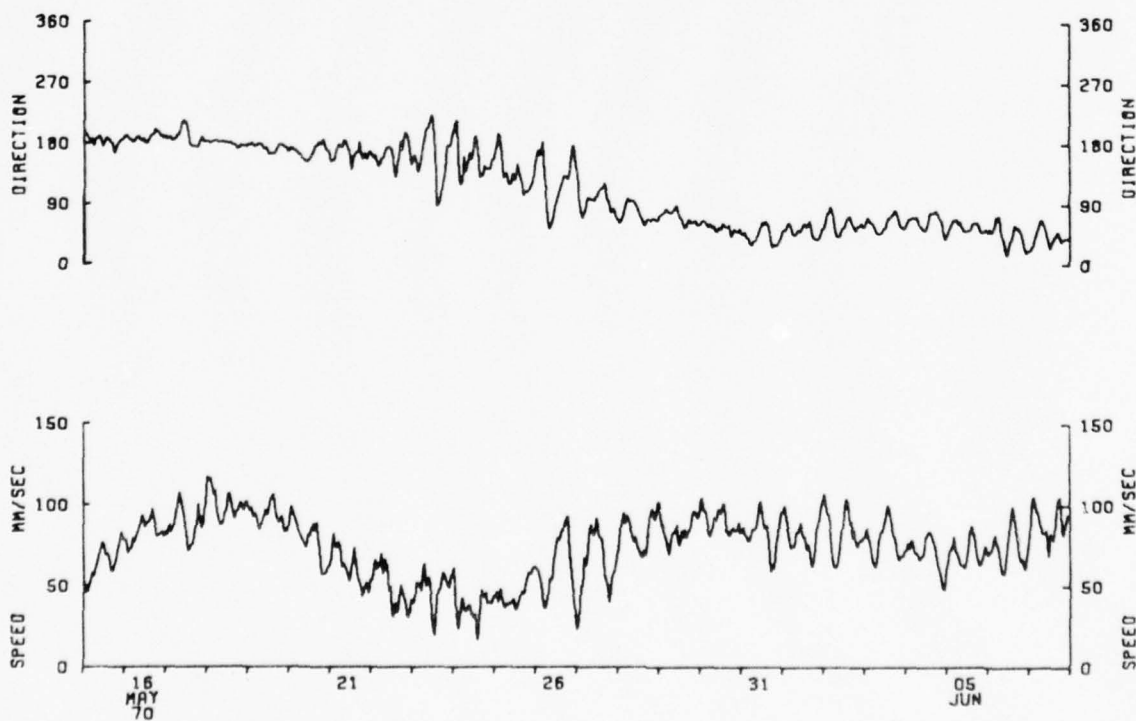
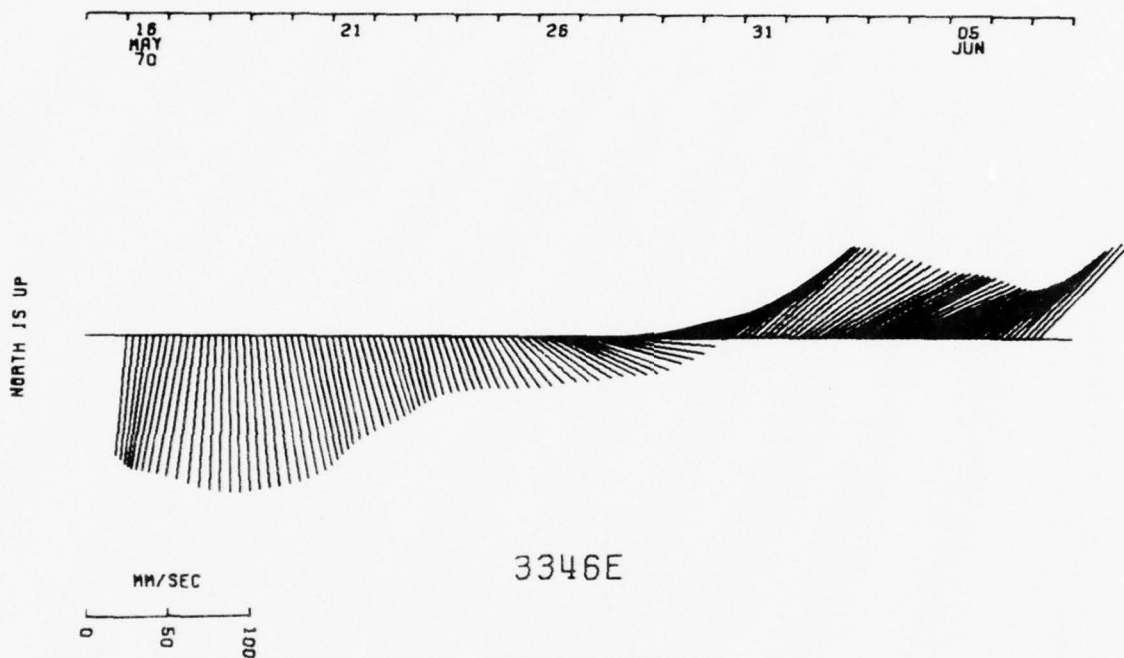
```
*****
VARIABLE *      EAST      NORTH      SPEED
UNITS    *      MM/SEC    MM/SEC    MM/SEC
*****
MEAN      =      38.192      -11.326      74.625
STD. ERR. =      .721      1.164      .413
VARIANCE  =    1214.504    3166.699    399.258
STD. DEV. =      34.850      56.273     19.981
KURTOSIS  =      1.907      1.617      2.740
SKEWNESS  =      -.211      -.117      -.426
MINIMUM   =    -65.812    -123.647      6.000
MAXIMUM   =     121.617     101.204     139.000
```

\*\*\*\*\*
EAST & NORTH
\*\*\*\*\*

```
COVARIANCE *      1502.687
STD. ERR. 9F COVARIANCE *      40.516
STD. DEV. 9F COVARIANCE *    1958.248
CORRELATION COEFFICIENT *      .766
VECTOR MEAN *      39.836
VECTOR VARIANCE *    2190.601
VECTOR STD. DEV. *      46.804
```

```
*****
* SAMPLE SIZE = 2336 PRINTS
*
* SPANNING RANGE
* FROM 70- V -14 21.00.55
* TO 70- VI -08 04.45.55
*
* DURATION 24.32 DAYS
```





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MOORING NO. 335

Lat. 32° 08.0'N Long. 64° 07.5'W

FOAM FLOAT WITH RADIO

Set May 17, 1970

30 m WIRE ROPE

Set by J. Gifford

10 16" GLASS SPHERES  
IN PROTECTIVE "HARD HATS"  
ON 10 m CHAIN

Ship R. V. AII Cruise 57

CURRENT METER - 3351

Recovered July 2, 1970

Recovered by R. Heinmiller

DEPTH RECORDER - 3352

Ship R. V. Knorr Cruise 5

Mooring type - Intermediate

Purpose of mooring

1,000 m 3/16" WIRE ROPE

A) Acoustic propagation test

B) Engineering test of intermediate type mooring

INCLINOMETER - 3353

Data No.	Instr. Type	Depth (m)
-------------	----------------	--------------

14 16" GLASS SPHERES in nets  
ON 30 m OF 5/8" NYLON

3351*	Model 850	1312
3352	Depth Rec.	1313
3353	Incl.	2314
3354	Model 850	2346
3355	Tens.	2347
3356	Model 850	4298

CURRENT METER - 3354

TENSIONOMETER - 3355

Water depth 4400

1,000 m 7/16" NYLON

Comments

3356 - instrument flooded.

792 m 7/16" NYLON

CURRENT METER - 3356

ACOUSTIC RELEASE,  
TRANSPONDING

STIMSON ANCHOR, 1,500 LBS.  
30 FT CHAIN WITH  
65 LB. DANFORTH

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Data number 3351

Instrument No.: M-175

Type: Model 850

Depth: 1312 m

Water depth: 4400 m

Start time: 70-V-17 07.45.58

Stop time: 70-VII-02 08.45.58

Duration: 46d 1h

Sampling scheme: Interval

time between strobes = 5.27 seconds

no. of strobes per interval = 24

interval time = 900 seconds

COMMENTS:

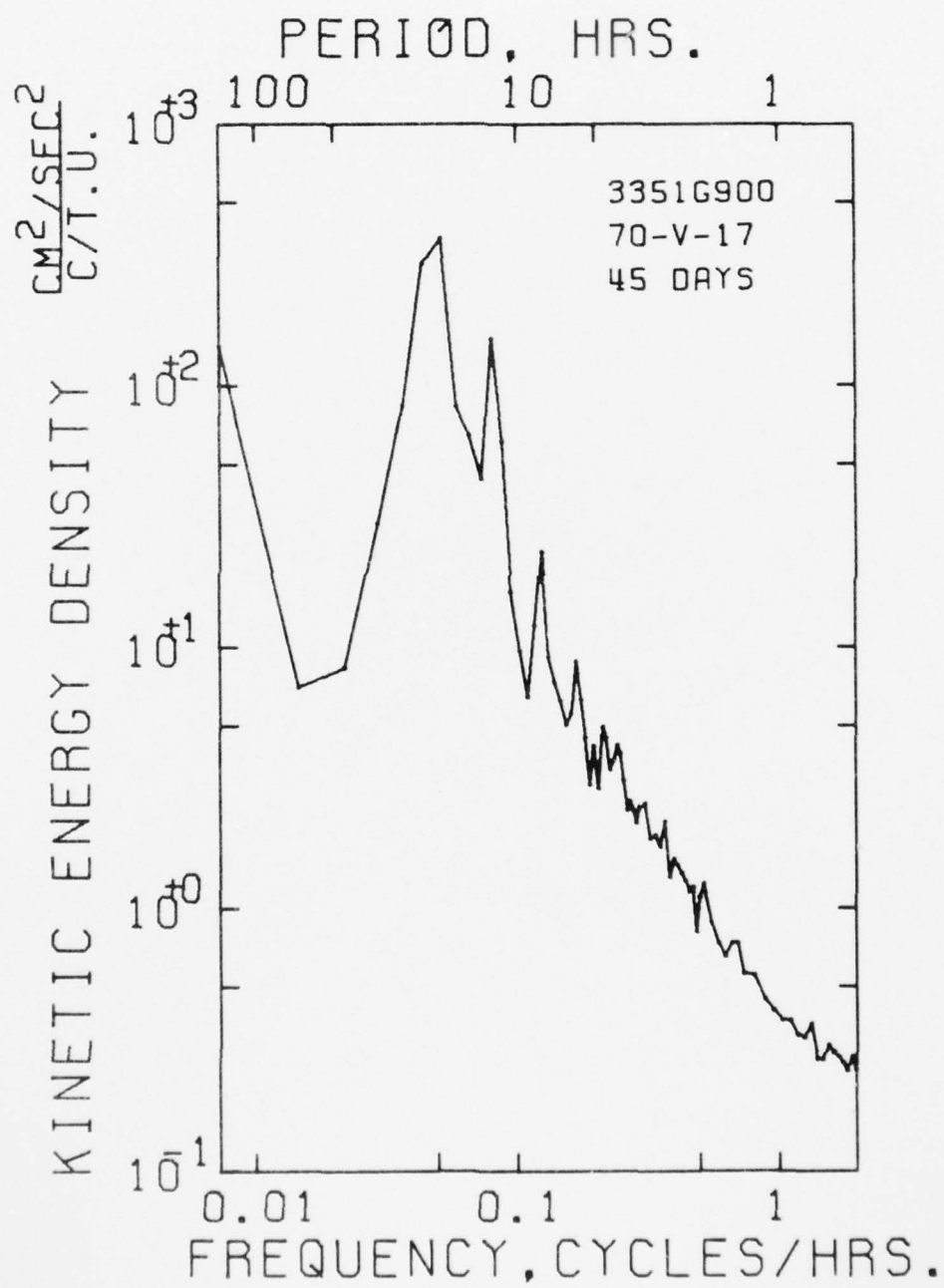
DATA/ 3351G900

```
*****
VARIABLE *      EAST      NORTH      SPEED
UNITS    *      MM/SEC    MM/SEC    MM/SEC
*****
MEAN      *      -31.077      2.118      64.409
STD. ERR. *          .621          .785          .533
VARIANCE  *      1707.046      2727.542      1256.289
STD. DEV. *          41.316          52.226      35.444
KURTOSIS  *          3.196          2.981          4.103
SKEWNESS  *          -3.317          .293          1.026
MINIMUM   *      -189.838      -132.288          6.000
MAXIMUM   *          89.803      186.623      210.000
```

\*\*\*\*\*
EAST & NORTH
\*\*\*\*\*

```
COVARIANCE      *      -764.732
STD. ERR. OF COVARIANCE *      47.345
STD. DEV. OF COVARIANCE *      3147.978
CORRELATION COEFFICIENT *      -.354
VECTOR MEAN      *      31.149
VECTOR VARIANCE   *      2217.294
VECTOR STD. DEV.  *      47.088
```

```
*****
* SAMPLE SIZE * 4421 PRINTS
*
* SPANNING RANGE
* FROM 70-V-17 07.45.58
* TO 70-VII-02 08.45.58
*
* DURATION 46.04 DAYS
```



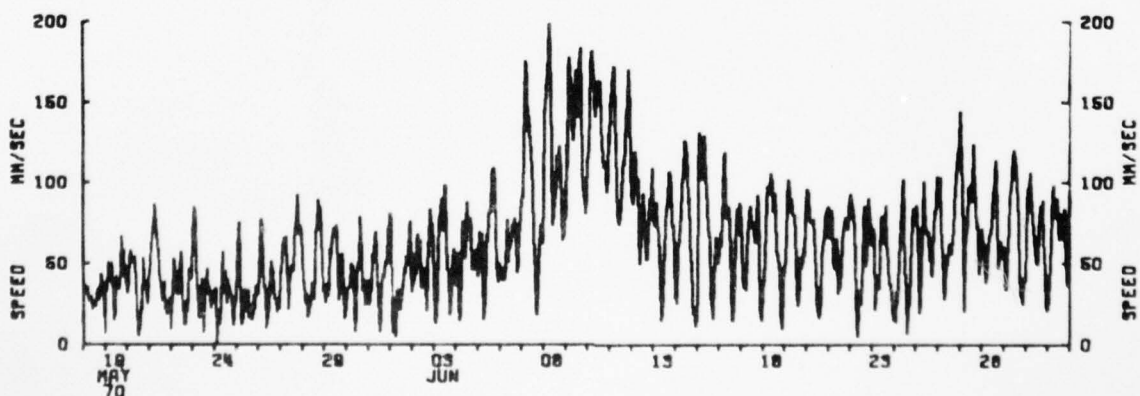
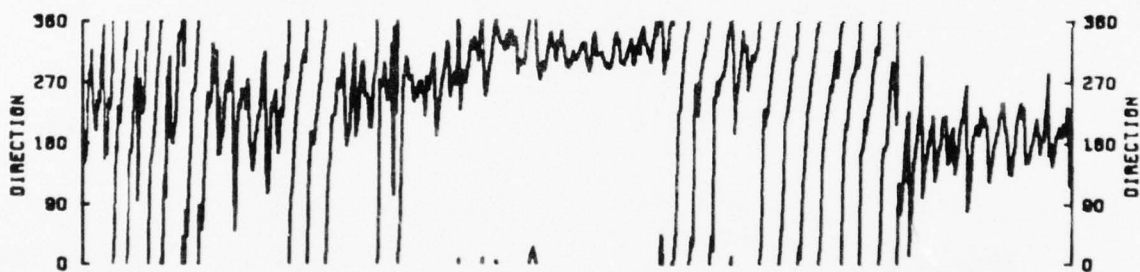
18 MAY 70 24 28 03 JUN 08 13 18 23 28

NORTH IS UP



MM/SEC  
0 100 200

3351G



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15 AUG 70 20 25 30 04 SEP 09 14 19 24 29 04 OCT



3432J  
2263 M  
NORTH IS UP

MM/SEC  
0 100 200



3434C  
4115 M  
NORTH IS UP

15 AUG 70 20 25 30 04 SEP 09 14 19 24 29 04 OCT

MOORING NO. 343

Lat. 35° 58.0'N Long. 70° 33.0'W

Set August 13, 1970

Set by J. Gifford

Ship R. V. Knorr Cruise 8

Recovered October 8, 1970

Recovered by D. Moller

Ship R. V. Knorr Cruise 13

Mooring type - Intermediate

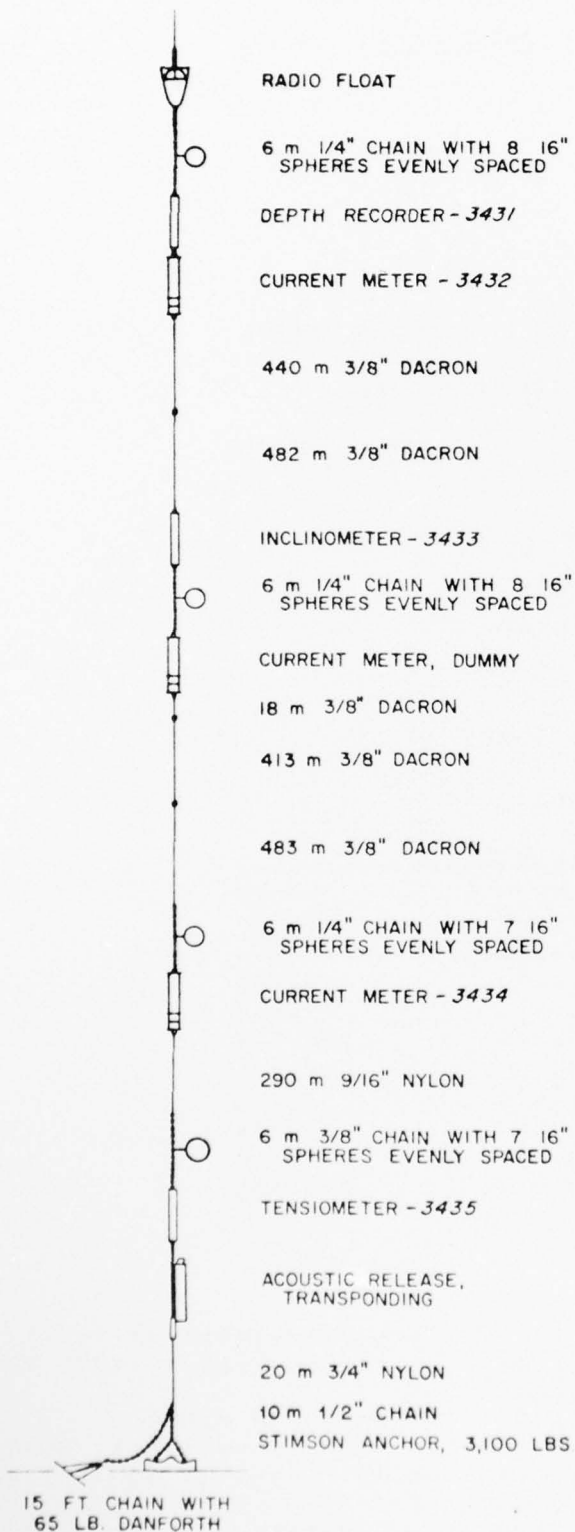
Purpose of mooring

- A) Low frequency wave correlation across the Gulf Stream
- B) Further test of intermediate type mooring

Data No.	Instr. Type	Depth (m)
3431	Depth Rec.	2261
3432*	Model 850	2263
3433	Incl.	3185
3434*	Model 850	4115
3435	Tens.	4412
Water depth		4444

#### Comments

The dummy current meter in the mooring line was a test of the re-designed pressure case for the new Vector Averaging Current Meters.



Data number 3432

Instrument No.: M-151

Type: Model 850

Depth: 2263 m

Water depth: 4444 m

Start time: 70-VIII-13 15.30.37

Stop time: 70-IX-30 11.00.37

Duration: 47d 20h 30m

Sampling scheme: Interval

time between strobes = 5.27seconds

no. of strobes per interval = 16

interval time = 900 seconds

COMMENTS:

DATA/ 3432J900

```
*****
VARIABLE *          EAST          NORTH          SPEED
UNITS    *          MM/SEC        MM/SEC        MM/SEC
*****
MEAN      =          1.545          -.473          98.522
STD. ERR. =           .663          1.404           .546
VARIANCE  =        2013.789        9055.880        1370.764
STD. DEV. =         44.931         95.162         37.024
KURTOSIS  =         2.840          1.674          2.714
SKEWNESS  =         -.414          .424           .154
MINIMUM   =        -151.197        -169.000         17.000
MAXIMUM   =         110.532         226.987        234.000
```

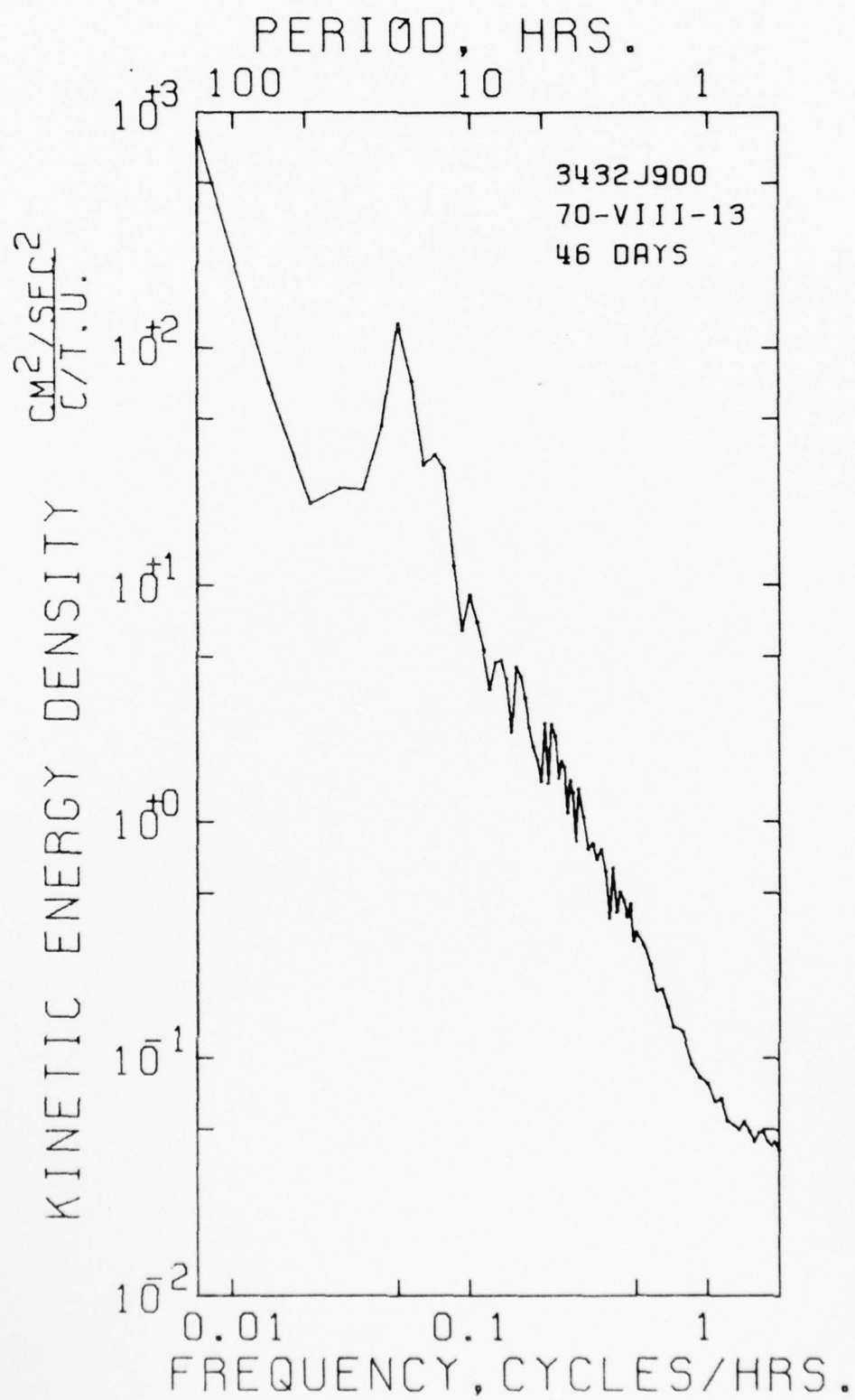
\*\*\*\*\*
EAST X NORTH
\*\*\*\*\*

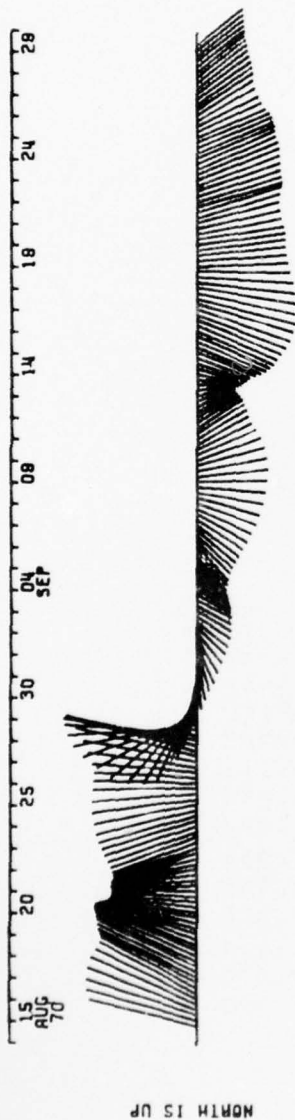
```
CHVARIANCE *
STD. ERR.  *
STD. DEV.  *
CORRELATION COEFFICIENT *
VECTHR MEAN *
VECTHR VARIANCE *
VECTHR STD. DEV. *
```

```
*          66.353
*          61.045
*        4136.201
*        .156E-1
*          1.616
*        5537.335
*          74.413
```

```
*****
* SAMPLE SIZE = 4591 POINTS
*
* SPANNING RANGE
* FROM 70-VIII-13 15.30.37
* TO 70- IX -30 11.00.37
*
* DURATION 47.81 DAYS
```



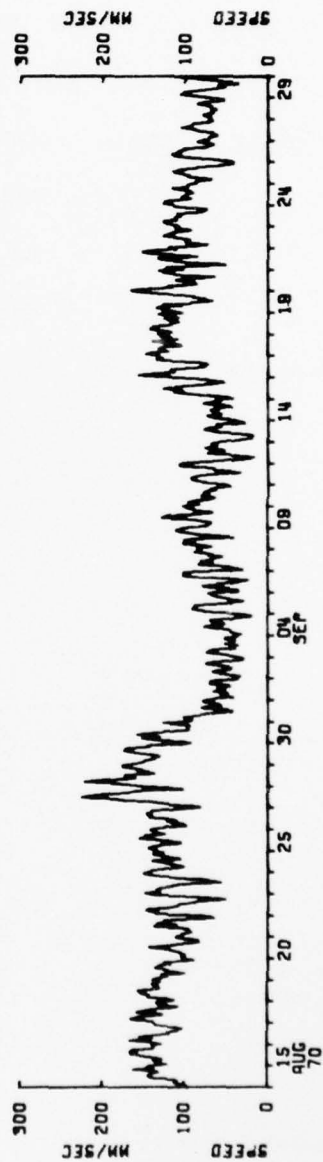




MM/SEC

0 100 200

3432J



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Data number 3434

Instrument No.: M-240

Type: Model 850

Depth: 4115 m

Water depth: 4444 m

Start time: 70-VIII-13 15.30.37

Stop time: 70-X-08 13.45.37

Duration: 55d 22h 15m

Sampling scheme: Interval

time between strobes = 5.27 seconds

no. of strobes per interval = 15

interval time = 900 seconds

COMMENTS:

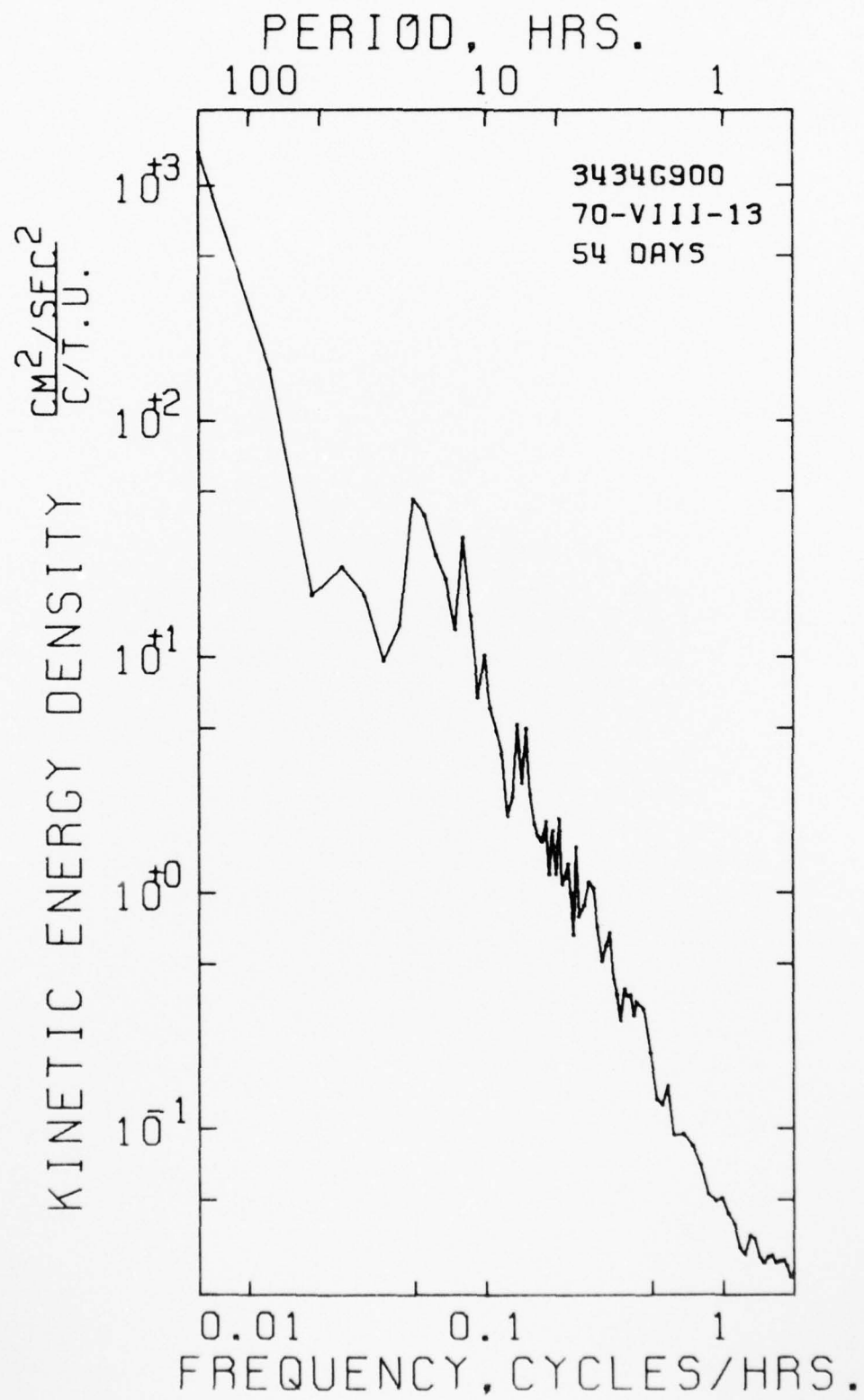
DATA/ 3434G900

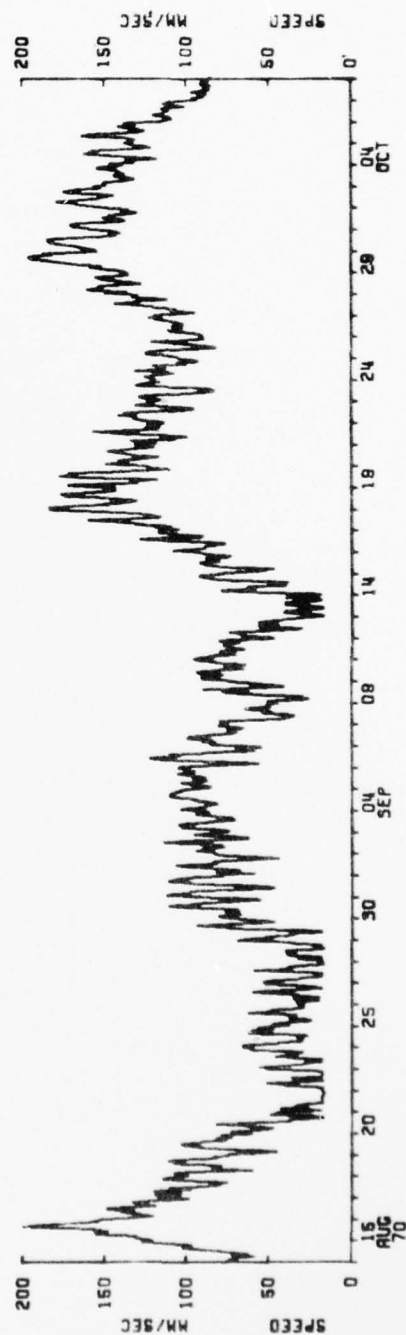
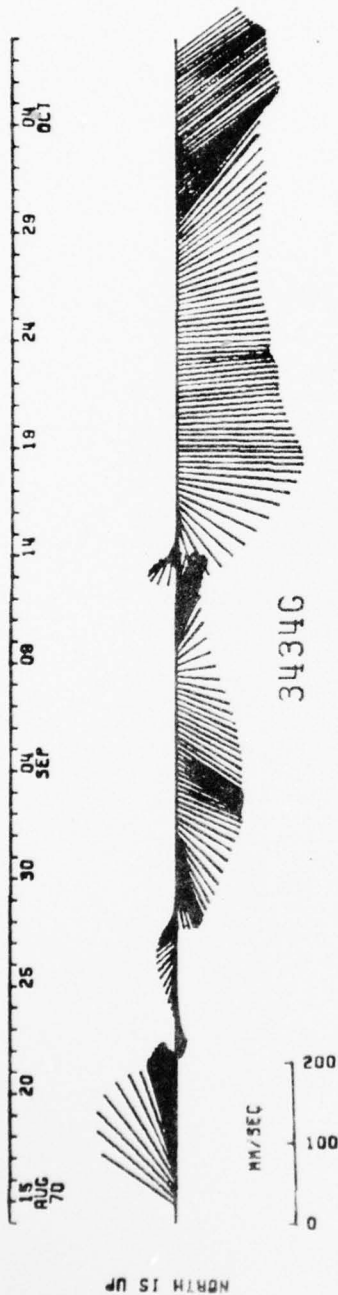
```
*****
VARIABLE *      EAST      NORTH      SPEED
UNITS    *      MM/SEC    MM/SEC    MM/SEC
*****
MEAN      =      18.226      -50.933      94.037
STD. ERR. =      .819      .879      .584
VARIANCE  = 3600.020      4148.025      1831.364
STD. DEV. =      60.000      64.405      42.794
KURTOSIS  =      2.066      2.278      2.274
SKEWNESS  =      .190      .363      .474E-1
MINIMUM   = -109.614      -186.100      16.000
MAXIMUM   = 164.631      137.179      203.000
```

```
*****
EAST & NORTH
*****
```

```
COVARIANCE      = -259.149
STD. ERR. OF COVARIANCE      = 70.759
STD. DEV. OF COVARIANCE      = 5185.223
CORRELATION COEFFICIENT      = -.671E-1
VECTOR MEAN      = 54.096
VECTOR VARIANCE   = 3874.022
VECTOR STD. DEV.  = 62.242
```

```
*****
* SAMPLE SIZE = 5370 PRINTS
* SPANNING RANGE
* FROM 70-VIII-13 15.30.37
* TO 70-X-08 13.45.37
* DURATION 55.93 DAYS
```





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MOORING NO. 345  
 Lat. 39° 23.5'N Long. 70° 58.6'W

Set August 18, 1970

Set by J. Gifford

Ship R. V. Knorr Cruise 8

Recovered October 6, 1970

Recovered by D. Moller

Ship R. V. Knorr Cruise 13

Mooring type - Intermediate

Purpose of mooring

- A) Low frequency wave correlation across the Gulf Stream
- B) Further test of intermediate mooring

RADIO FLOAT

1 m 3/4" NYLON  
 10 m 9/16" NYLON WITH 5 GLASS SPHERES

CURRENT METER - 3451

DEPTH RECORDER - 3452

454 m 3/8" DACRON

INCLINOMETER - 3453

10 m 9/16" NYLON WITH 6 GLASS SPHERES

CURRENT METER (DUMMY)

450 m 3/8" DACRON

10 m 9/16" NYLON WITH 5 GLASS SPHERES

CURRENT METER - 3454

50 m 9/16" NYLON WITH 1 GLASS SPHERE

10 m 9/16" NYLON WITH 5 GLASS SPHERES

TENSIOMETER - 3455

ACOUSTIC RELEASE,  
 TRANSPONDING

20 m 3/4" NYLON

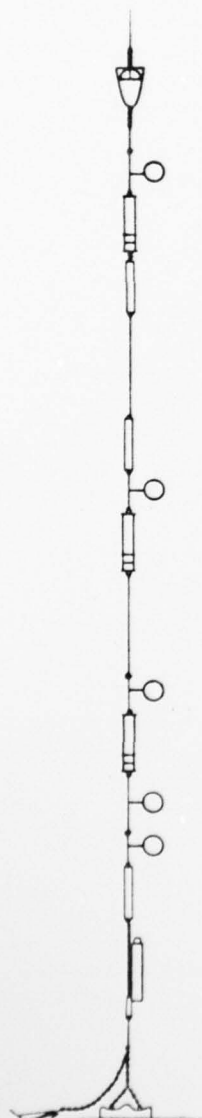
5m 1/2" CHAIN

STIMSON ANCHOR, 3,200 LBS.

Data No.	Instr. Type	Depth (m)
3451*	Model 850	1504
3452	Depth Rec.	1505
3453	Incl.	1960
3454	Model 850	2434
3455	Tens.	2495
Water depth		2527

Comments

3454 - no recoverable data



15 FT CHAIN WITH  
 65 LB. DANFORTH

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Data number 3451

Instrument No.: M-122

Type: Model 850

Depth: 1504 m

Water depth: 2527 m

Start time: 70-VIII-19 00.00.37

Stop time: 70-X-06 17.15.37

Duration:

Sampling scheme: Interval

time between strobes = 5.27 seconds

no. of strobes per interval = 16

interval time = 900 seconds

COMMENTS:

DATA/ 3451G900

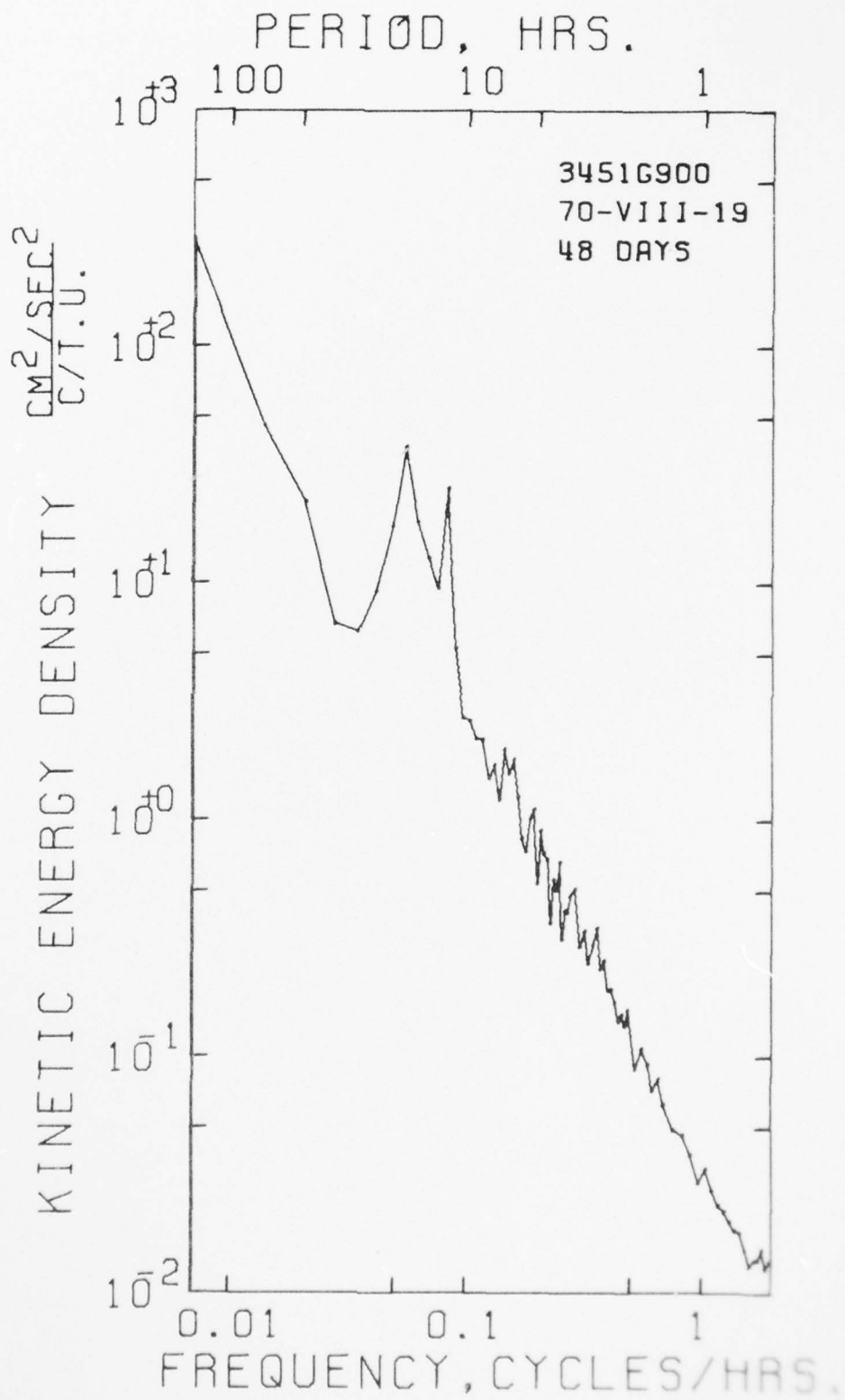
```
*****
VARIABLE *      EAST      NORTH      SPEED
UNITS    *      MM/SEC    MM/SEC    MM/SEC
*****
MEAN      *      -27.831      -4.702      41.839
STD. ERR. *          .495          .312          .372
VARIANCE  *      1144.305      456.010      646.468
STD. DEV. *          33.828      21.354      25.426
KURTOSIS  *          2.526          3.439          3.049
SKEWNESS  *          .458          .695E-1          .940
MINIMUM   *      -129.793      -85.768      14.585
MAXIMUM   *          47.498      80.082      132.675
*****
```

\*\*\*\*\*
EAST & NORTH
\*\*\*\*\*

```
COVARIANCE *
STD. ERR. OF COVARIANCE *
STD. DEV. OF COVARIANCE *
CORRELATION COEFFICIENT *
VECTOR MEAN *
VECTOR VARIANCE *
VECTOR STD. DEV. *
```

```
52.821
13.417
917.686
.731E-1
28.225
200.158
28.287
```

```
*****
* SAMPLE SIZE = 4678 POINTS
*
* SPANNING RANGE
* FROM 70-VIII-19 00.00.37
* TO 70-X-06 17.15.37
*
* DURATION 48.72 DAYS
*****
```



AD-A044 223

WOODS HOLE OCEANOGRAPHIC INSTITUTION MASS  
A COMPILATION OF MOORED CURRENT DATA AND ASSOCIATED OCEANOGRAPH--ETC(U)  
JUN 77 S A TARBELL, A W WHITLATCH  
WHOI-77-18

F/G 8/3

N00014-66-C-0241

NL

UNCLASSIFIED

2 OF 2

ADA044223



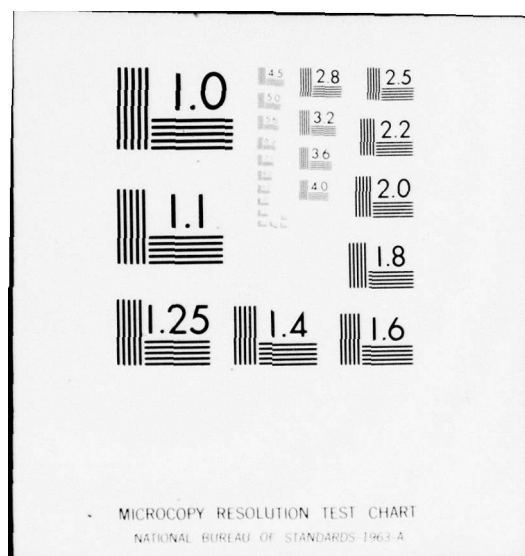
END

DATE

FILMED

10-77

DDC



21 26 31 05 10 15 20 25 30 05  
AUG SEP OCT  
70

EAST IS UP



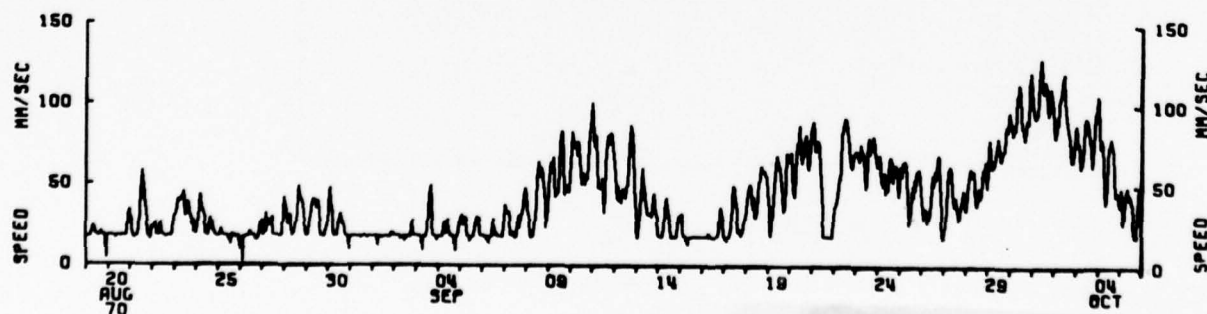
MM/SEC

0 50 100

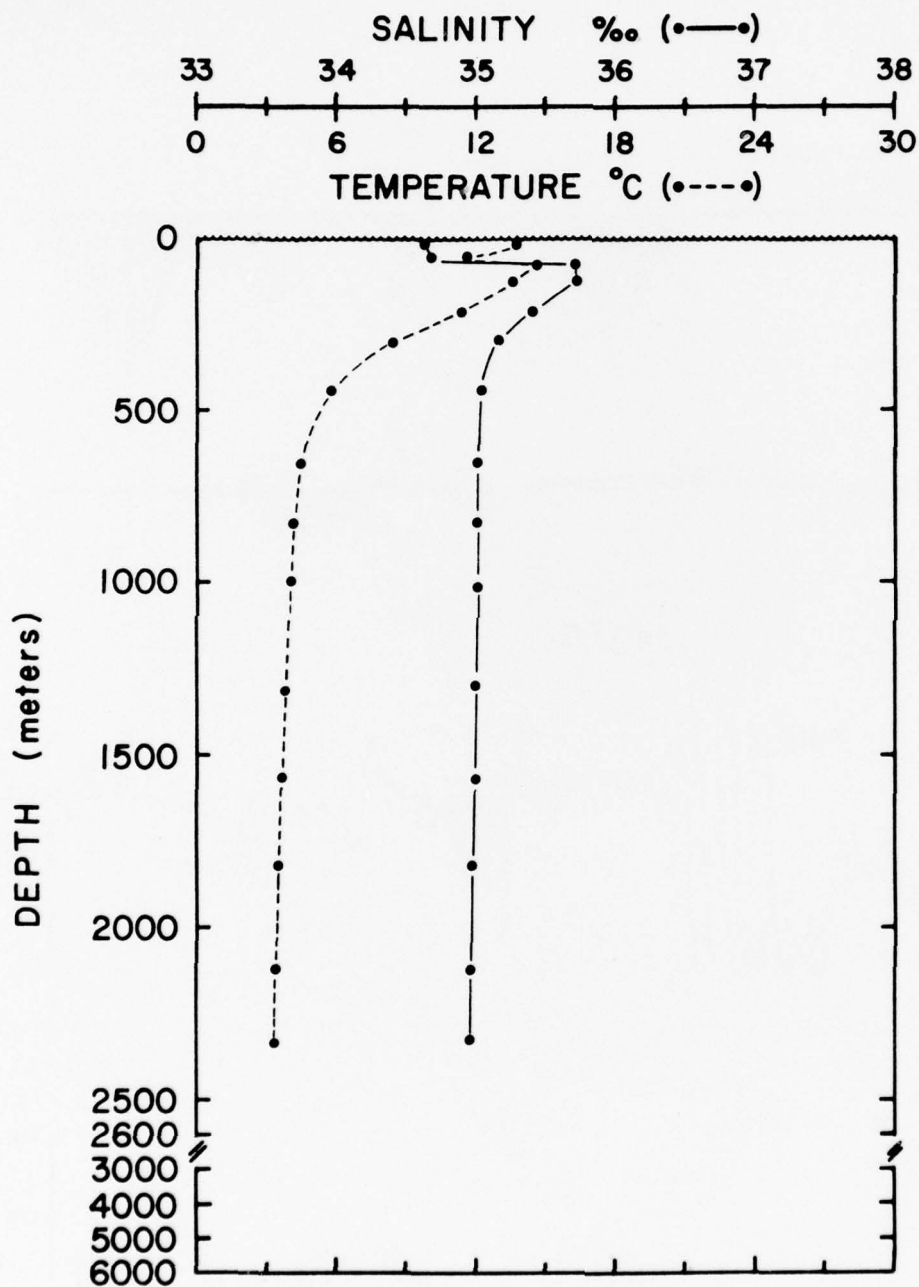
NORTH IS UP



3451G



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KN-017-046

LAT. 39°09.4'N

LONG. 70°00.2'W

DATE 70-12-17



MOORING NO. 347

Lat. 39° 50.2'N Long. 70° 40.5'W

Set August 19, 1970

Set by J. Gifford

Ship R. V. Knorr Cruise 8

Recovered December 4, 1970

Recovered by R. Heinmiller

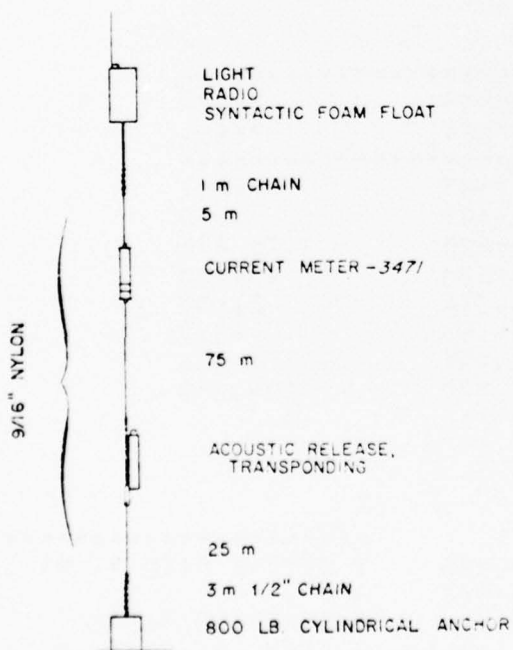
Ship R. V. Knorr Cruise 17

Mooring type - Bottom

Purpose of mooring

To study the topographical wave  
motion across the Continental Slope

<u>Data</u> <u>No.</u>	<u>Instr.</u> <u>Type</u>	<u>Depth</u> <u>(m)</u>
3471*	Model 850	776
Water depth		876



Comments

Data number 3471

Instrument No.: M-238

Type: Model 850

Depth: 776 m

Water depth: 876 m

Start time: 70-VIII-19 14.00.37

Stop time: 70-XII-04 16.00.37

Duration: 107d 2h

Sampling scheme: Interval

time between strobes = 5.27 seconds

no. of strobes per interval = 15

interval time = 1800 seconds

COMMENTS:

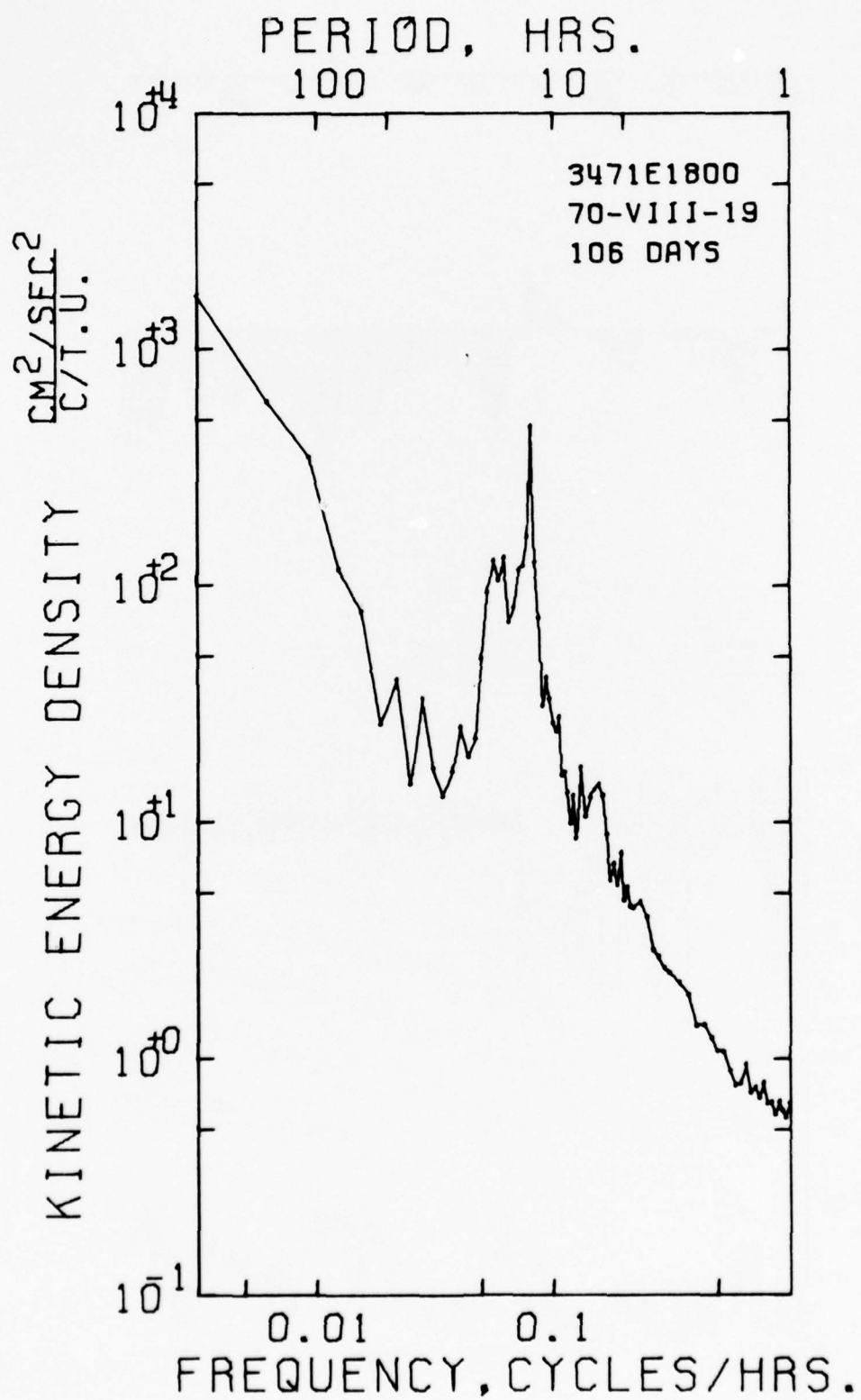
DATA/ 3471E1800

```
*****
VARIABLE *          EAST          NORTH          SPEED
UNITS    *          MM/SEC        MM/SEC        MM/SEC
*****
MEAN      *          65.643         1.439         88.207
STD. ERR. *           .961          .481          .693
VARIANCE  *        4748.762       1191.605       2470.898
STD. DEV. *         68.911        34.520        49.708
KURTOSIS  *          2.450         3.777         2.198
SKEWNESS  *           .254         .159          .312
MINIMUM   *       -234.260       -131.331        6.056
MAXIMUM   *        135.403        177.876       234.283
*****
```

\*\*\*\*\*  
EAST & NORTH

```
*****
COVARIANCE *          -163.986
STD. ERR. OF COVARIANCE *          46.944
STD. DEV. OF COVARIANCE *        3365.928
CORRELATION COEFFICIENT *          .689E-1
VECTOR MEAN *          65.658
VECTOR VARIANCE *        2970.183
VECTOR STD. DEV. *          54.499
*****
```

```
*****
* SAMPLE SIZE = 5141 POINTS
* SPANNING RANGE
* FROM 70-VIII-19 14.00.37
* TO 70-XII-04 16.00.37
* DURATION 107.08 DAYS
*****
```



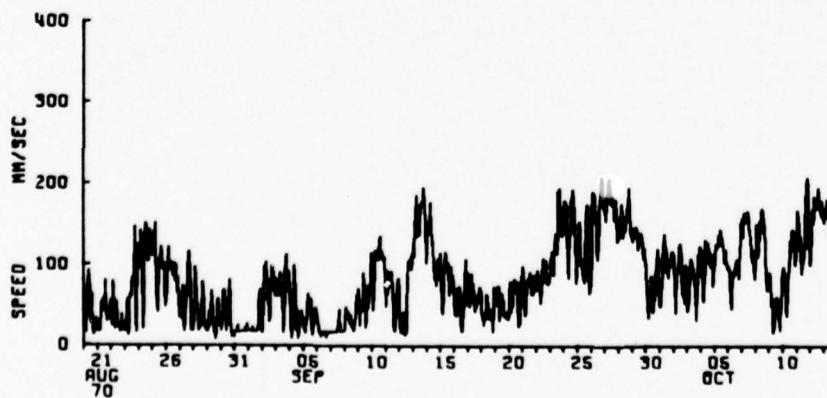
21 26 31 05 10 15 20 25 30 05 10  
AUG 70 SEP OCT

EAST IS UP

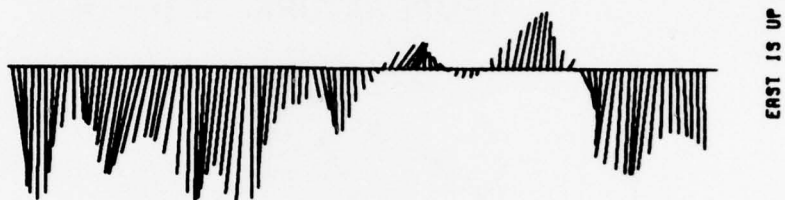


MM/SEC  
0 100 200

3471E

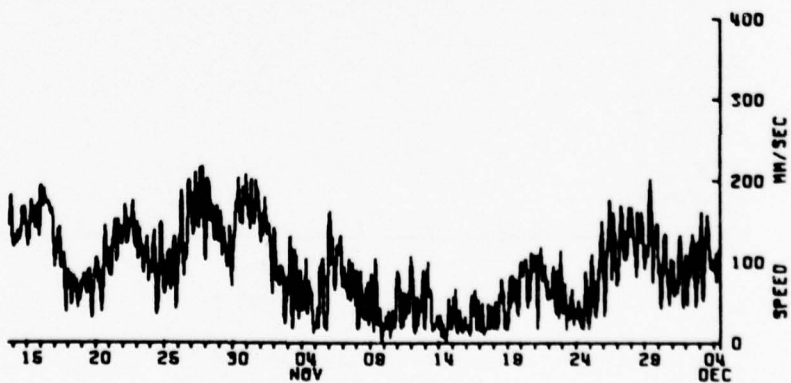
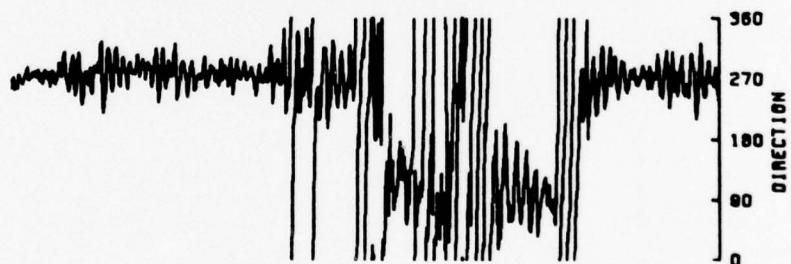


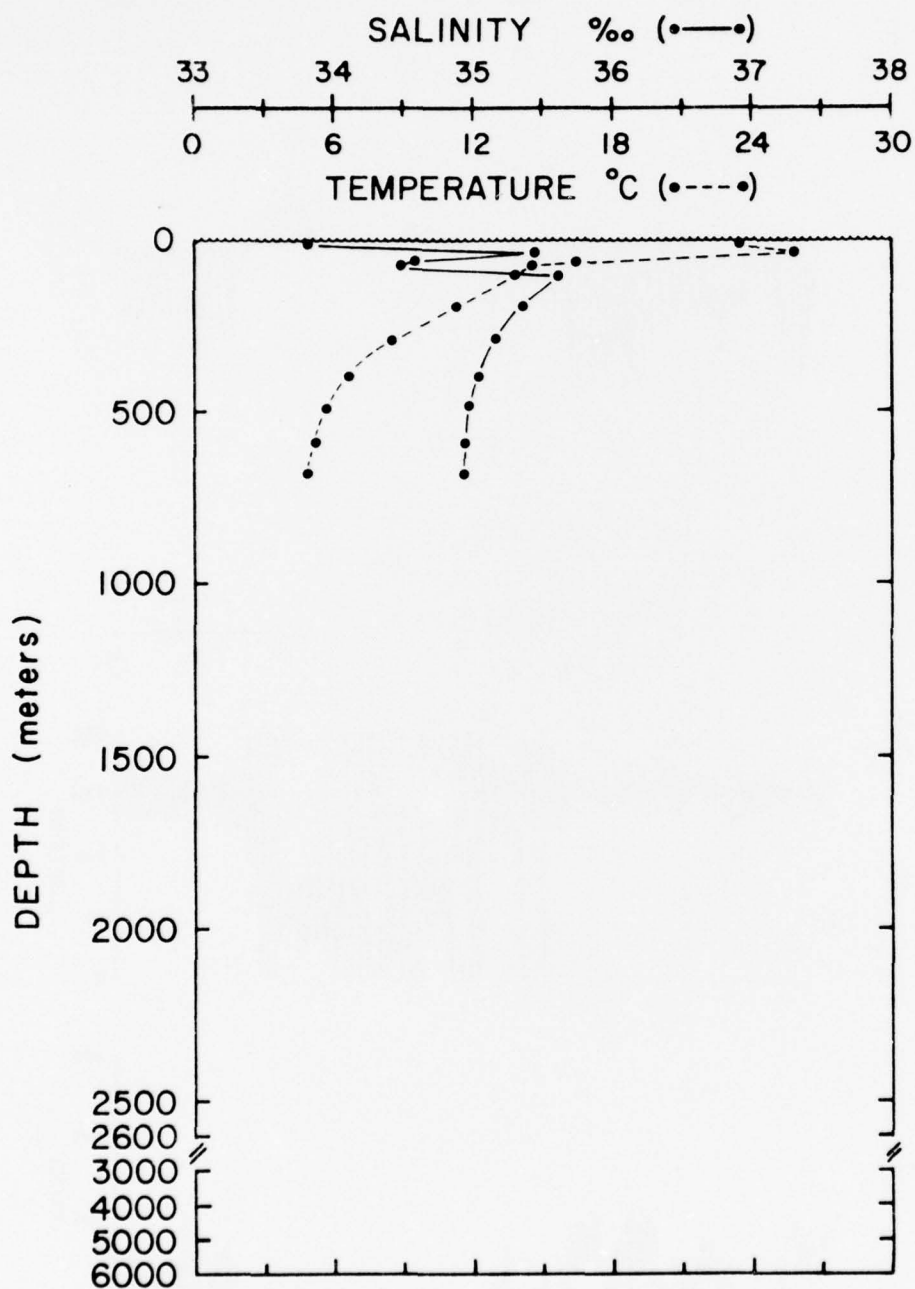
16 20 25 30 04 NOV 08 14 18 24 28 04 DEC



3471E

MM/SEC  
0 100 200





KN-013-041

LAT. 39° 55.0' N

LONG. 71° 01.2' W

DATE 70-10-14



MOORING NO. 348

Lat. 39° 50.2'N Long. 70° 57.0'W

Set August 19, 1970

Set by J. Gifford

Ship R. V. Knorr Cruise 8

Recovered October 6, 1970

Recovered by D. Moller

Ship R. V. Knorr Cruise 13

Mooring type - Bottom

Purpose of mooring

Internal wave measurements across  
the continental slope with moorings  
349 and 350

<u>Data</u> <u>No.</u>	<u>Instr.</u> <u>Type</u>	<u>Depth</u> <u>(m)</u>
3481*	Model 850	975
3482*	Model 850	982
Water depth		985

Comments



LIGHT  
RADIO  
GLASS BALL FLOAT  
1 m CHAIN

CURRENT METER - 3481

5 m 9/16 NYLON

CURRENT METER - 3482

ACOUSTIC RELEASE,  
TRANSPONDING

1m 1/2" CHAIN  
800 LB. CYLINDRICAL ANCHOR

Data number 3481

Instrument No.: M-142

Type: Model 850

Depth: 975 m

Water depth: 985 m

Start time: 70-VIII-19 18.15.37

Stop time: 70-X-06 12.15.37

Duration: 47d 18h

Sampling scheme: Interval

time between strobes = 5.27 seconds

no. of strobes per interval = 16

interval time = 900 seconds

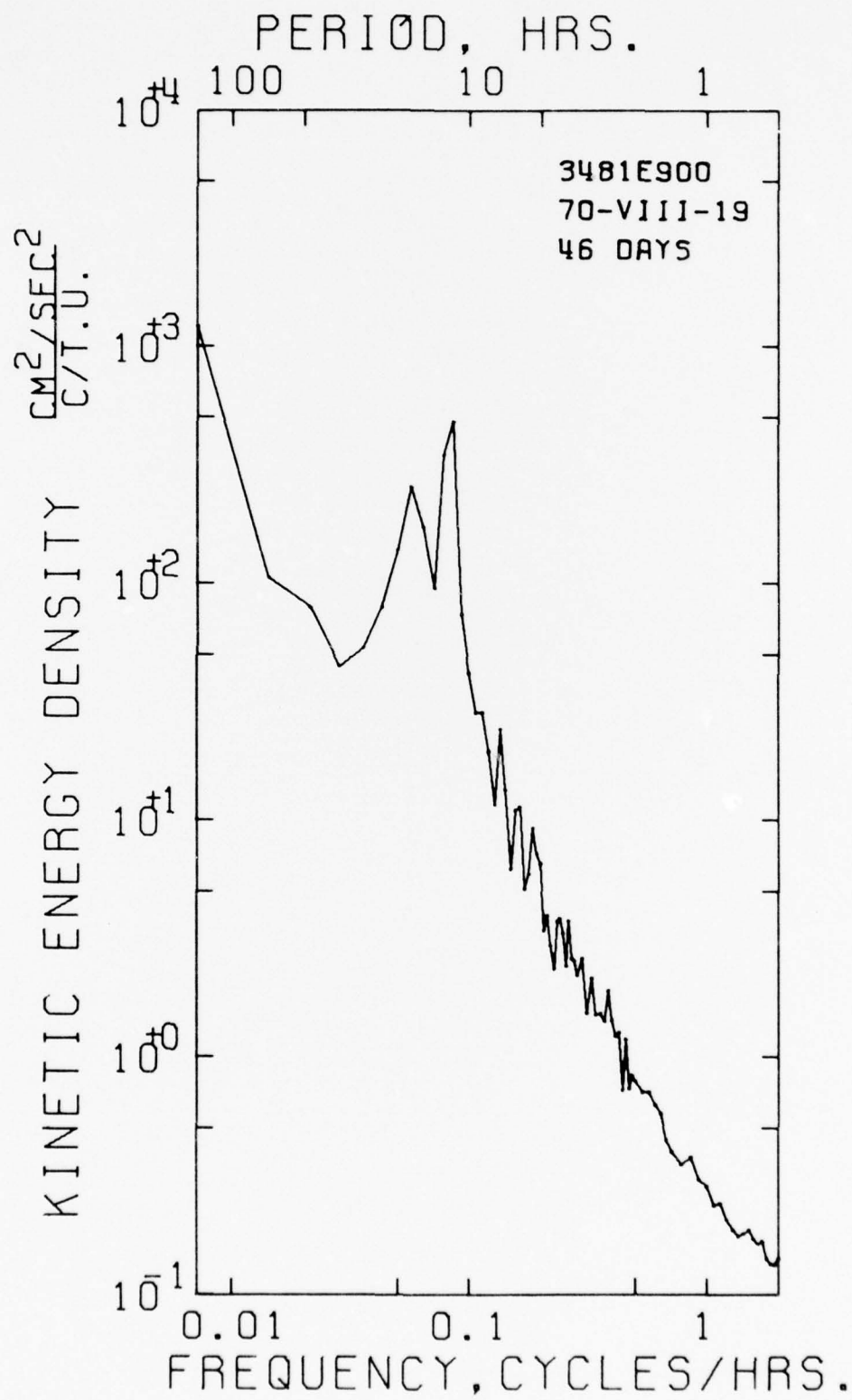
COMMENTS:

DATA/ 3481E900

```
*****
VARIABLE *          EAST          NORTH          SPEED
UNITS    *          MM/SEC        MM/SEC        MM/SEC
*****
MEAN      *          -29.908        -11.829        75.068
STD. ERR. *              .904          .680          .526
VARIANCE  *          3749.055        2120.250        1268.449
STD. DEV. *              61.230         46.046         35.615
KURTOSIS  *              2.793          3.288          2.714
SKEWNESS  *              .466          -.141          .420
MINIMUM   *          -184.777        -176.461        15.000
MAXIMUM   *           163.791         155.218        201.000
*****
```

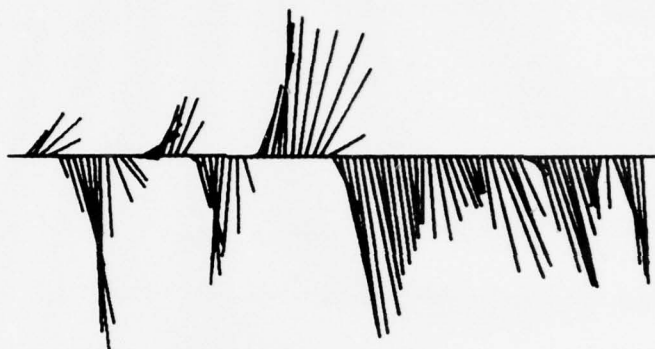
\*\*\*\*\*
EAST & NORTH
\*\*\*\*\*

```
CAVARIANCE *          40.409
STD. ERR.  *          46.465
STD. DEV.  *          3146.266
CORRELATION *          .143E-1
VECTOR MEAN *          32.162
VECTOR VARIANCE *          2934.653
VECTOR STD. DEV. *          54.172
*****
* SAMPLE SIZE = 4585 POINTS
* SPANNING RANGE
* FROM 70-VIII-19 18.15.37
* TO 70-X-06 12.15.37
* DURATION 47.75 DAYS
*****
```



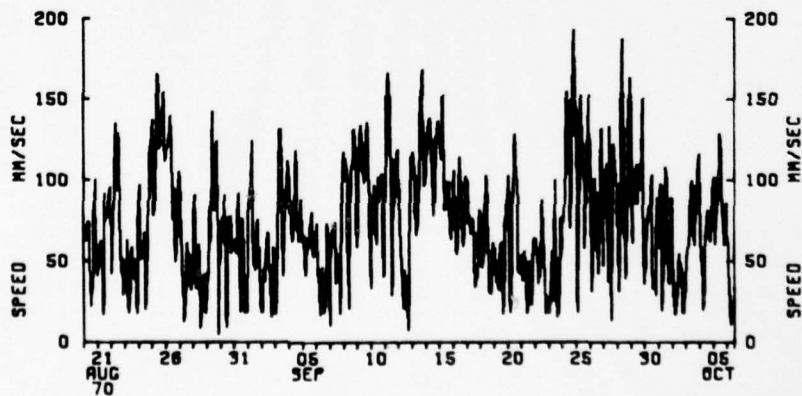
21 26 31 05 10 15 20 25 30 05  
AUG 70 SEP OCT

EAST IS UP



MM/SEC  
0 50 100

3481E



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Data number 3482

Instrument No.: M-191

Type: Model 850

Depth: 982 m

Water depth: 985 m

Start time: 70-VIII-19 18.15.37

Stop time: 70-X-06 12.15.37

Duration: 47d 18h

Sampling scheme: Interval

time between strobes = 5.27seconds

no. of strobes per interval = 16

interval time = 900 seconds

COMMENTS:

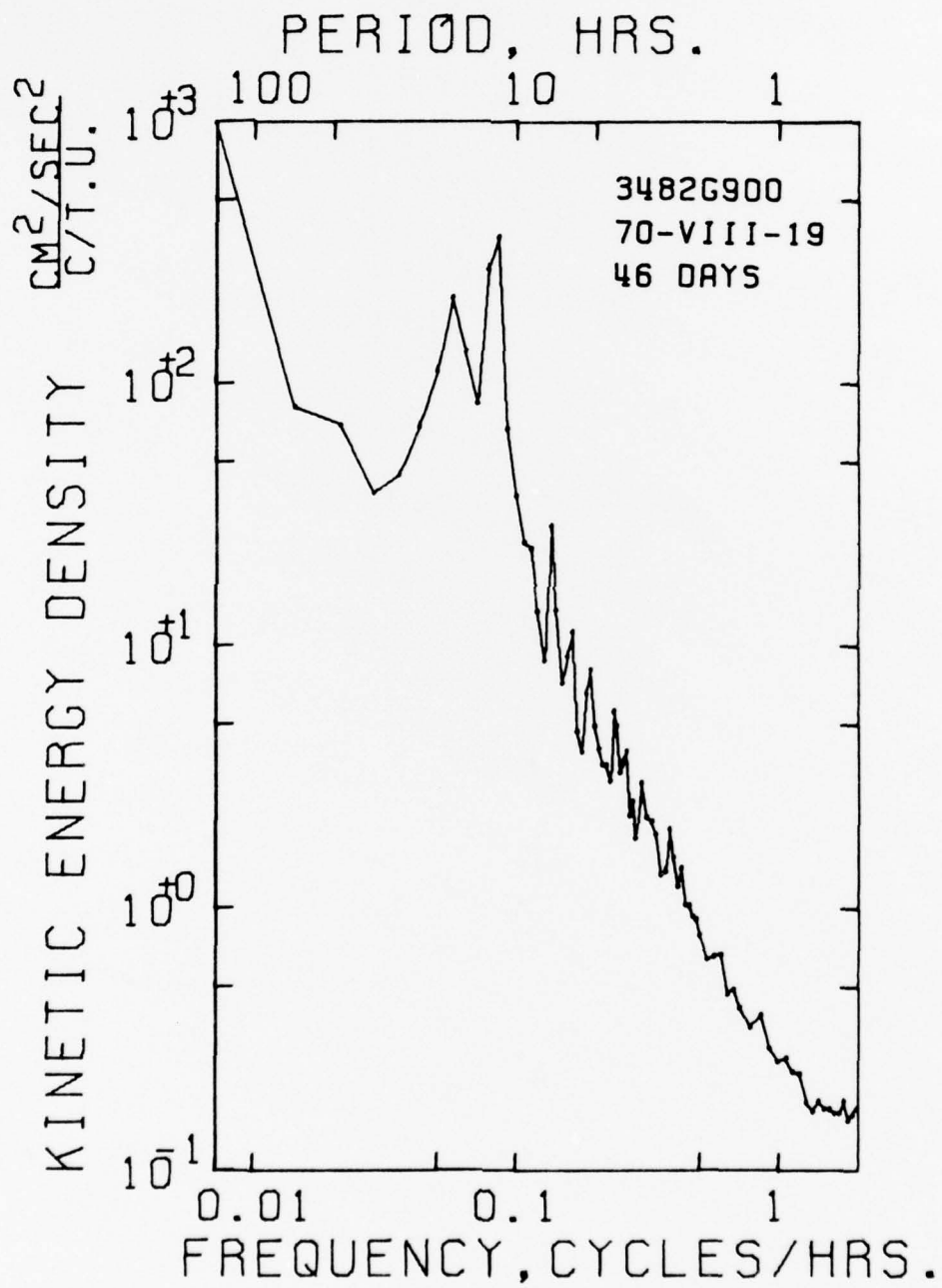
DATA/ 3482G900

```
*****
VARIABLE *      EAST      NORTH      SPEED
UNITS    *      MM/SEC    MM/SEC      MM/SEC
*****
MEAN      =      -27.118      -15.823      67.634
STD. ERR. =           .808           .613           .496
VARIANCE  =      2992.932      1722.329      1126.654
STD. DEV. =           54.708           41.501           33.566
KURTOSIS  =           2.724           3.386           2.646
SKEWNESS  =           .331           .515E-1           .397
MINIMUM   =      -174.143      -166.657      13.576
MAXIMUM   =       147.737       145.921      199.031
```

\*\*\*\*\*
EAST & NORTH
\*\*\*\*\*

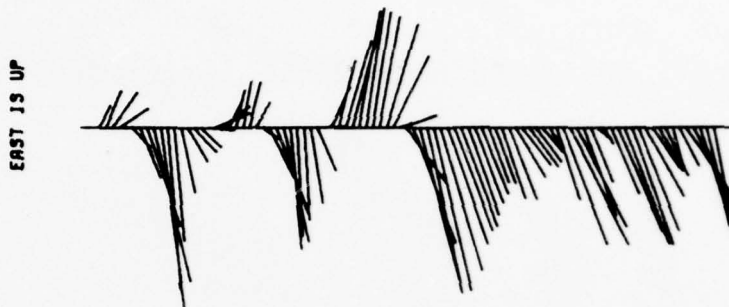
```
COVARIANCE      ■      89.692
STD. ERR. OF COVARIANCE ■      39.079
STD. DEV. OF COVARIANCE ■      2446.139
CORRELATION COEFFICIENT ■           .395E-1
VECTOR MEAN      ■      31.397
VECTOR VARIANCE  ■      2357.630
VECTOR STD. DEV. ■      48.555
```

```
*****
* SAMPLE SIZE = 4585 PRINTS
*
* SPANNING RANGE
* FROM 70-VIII-19 18.15.37
* TO 70-X-06 12.15.37
*
* DURATION 47.75 DAYS
```



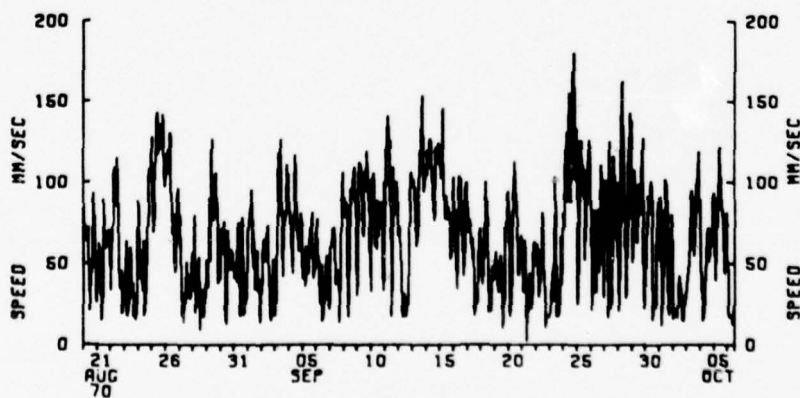


21 26 31 05 10 15 20 25 30 05  
AUG 70 SEP OCT

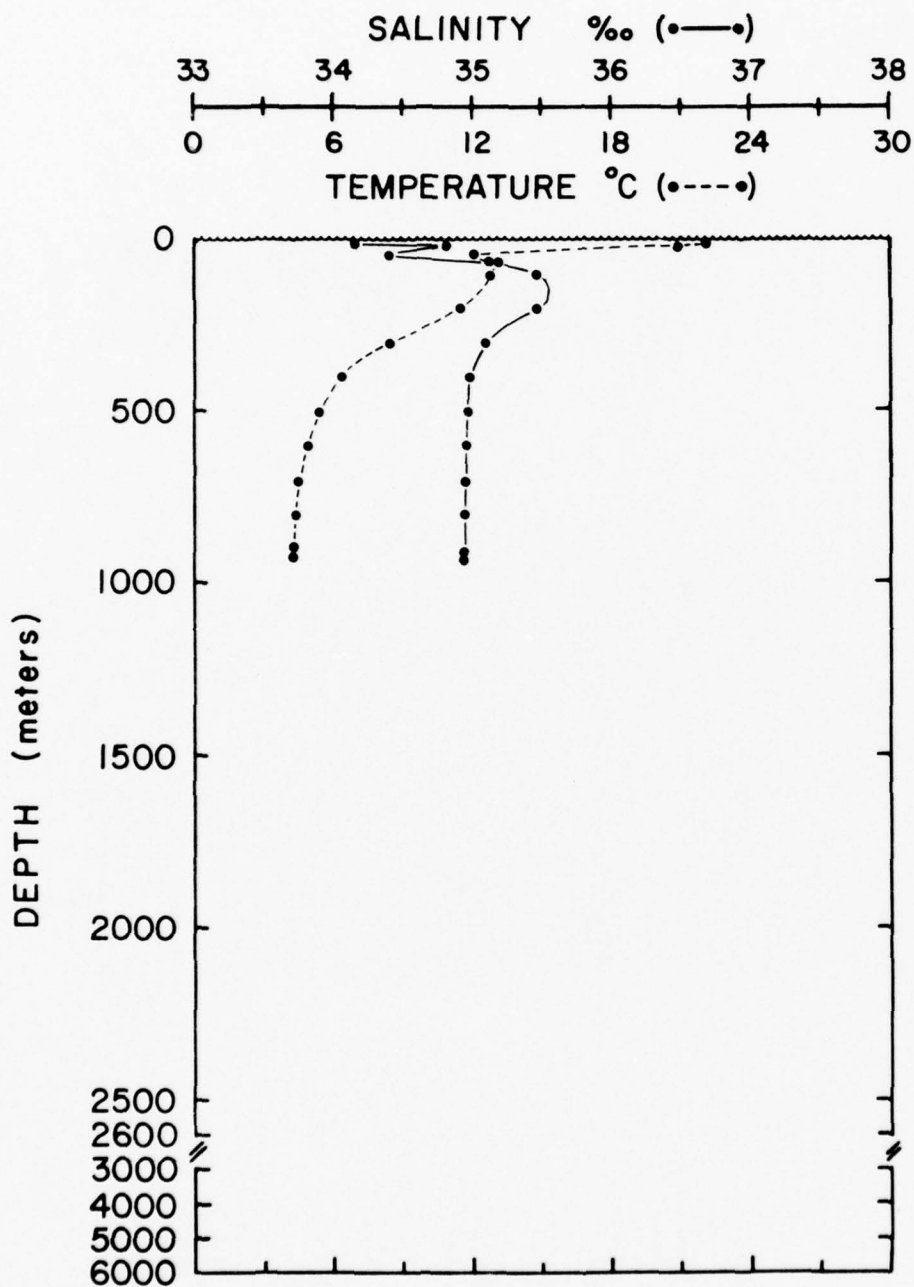


MM/SEC  
0 50 100

3482G



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KN - 008 - 020  
LAT. 39° 50.3' N  
LONG. 70° 00.7' W  
DATE 70-08-17

MOORING NO. 349  
Lat. 39° 50.6'N Long. 70° 56.2'W

Set August 19, 1970

Set by J. Gifford

Ship R. V. Knorr Cruise 8

Recovered October 6, 1970

Recovered by D. Moller

Ship R. V. Knorr Cruise 13

Mooring type - Bottom

Purpose of mooring

Internal wave measurements across  
the continental slope with moorings  
348 and 350

Data No.	Instr. Type	Depth (m)
3491*	Model 850	846
3492*	Model 850	933
3493	Model 850	941
Water depth		943



LIGHT  
RADIO  
GLASS BALL FLOAT  
1 m CHAIN  
CURRENT METER - 3491

85 m 9/16" NYLON

CURRENT METER - 3492

5 m 9/16" NYLON

ACOUSTIC RELEASE,  
TRANSPONDING  
(ELECTRONICS ONLY)

CURRENT METER - 3493

ACOUSTIC RELEASE,  
TRANSPONDING  
(RELEASE MECHANISM ONLY)  
800 LB. CYLINDRICAL ANCHOR

Comments

3493 had a sticking vane.

Data number 3491

Instrument No.: M-175

Type: Model 850

Depth: 846 m

Water depth: 943 m

Start time: 70-VIII-19 20.30.37

Stop time: 70-X-06 13.15.37

Duration: 47d 16h 45m

Sampling scheme: Interval

time between strobes = 5.27 seconds

no. of strobes per interval = 16

interval time = 900 seconds

COMMENTS:

The speed value is at rotor threshold (1.8 mm/sec) part of the time.

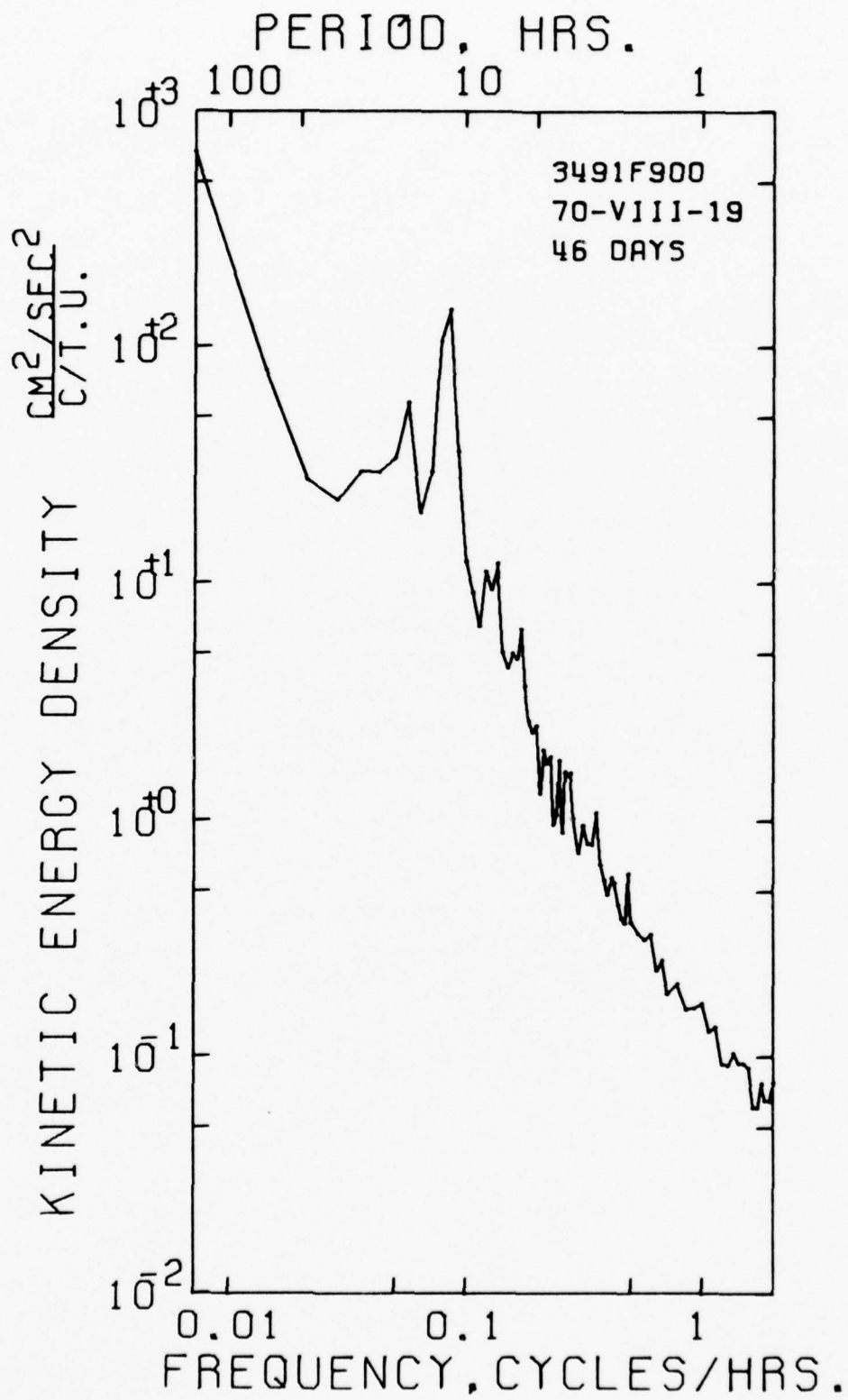
DATA/ 3491F900

```
*****
VARIABLE *      EAST      NORTH      SPEED
UNITS    *      MM/SEC    MM/SEC      MM/SEC
*****
MEAN      *      -21.609      1.851      43.249
STD. ERR. *          .670          .341          .509
VARIANCE  *      2055.036      533.379      1188.299
STD. DEV. *      45.333      23.095      34.472
KURTOSIS  *      3.981          6.420      4.652
SKEWNESS  *          .326          .378      1.437
MINIMUM   *      -195.056      -129.984      16.000
MAXIMUM   *      123.194      130.119      200.000
*****
```

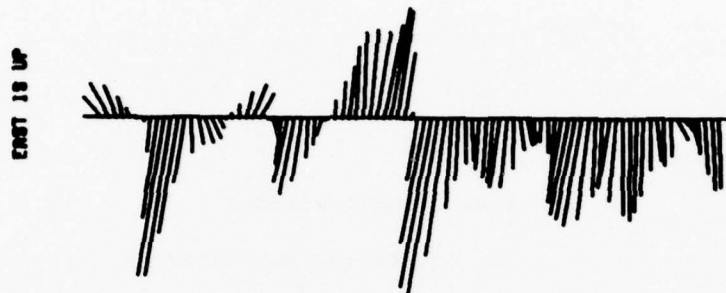
\*\*\*\*\*
EAST & NORTH
\*\*\*\*\*

```
COVARIANCE      *      -266.767
STD. ERR. OF COVARIANCE *      25.841
STD. DEV. OF COVARIANCE *      1748.819
CORRELATION COEFFICIENT *      .255
VECTOR MEAN      *      21.688
VECTOR VARIANCE   *      1294.207
VECTOR STD. DEV.  *      35.975
```

```
*****
* SAMPLE SIZE = 4580 POINTS
*
* SPANNING RANGE
* FROM 70-VIII-19 20.30.37
* TO 70-X-06 13.15.37
*
* DURATION 47.70 DAYS
*****
```

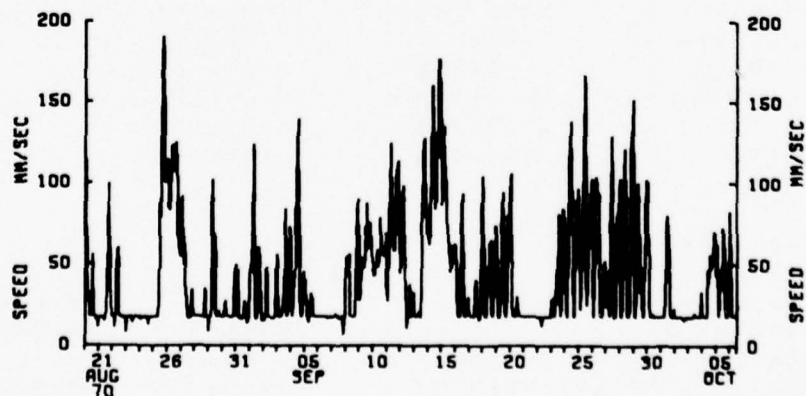


21 26 31 05 10 15 20 25 30 05  
AUG 70 SEP OCT



MM/SEC  
0 5 100

3491F



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Data number 3492

Instrument No.: M-145

Type: Model 850

Depth: 933 m

Water depth: 943 m

Start time: 70-VIII-19 19.30.55

Stop time: 70-X-06 13.00.55

Duration: 47d 17h 30m

Sampling scheme: Interval

time between strobes = 5.27 seconds

no. of strobes per interval = 15

interval time = 900 seconds

COMMENTS:

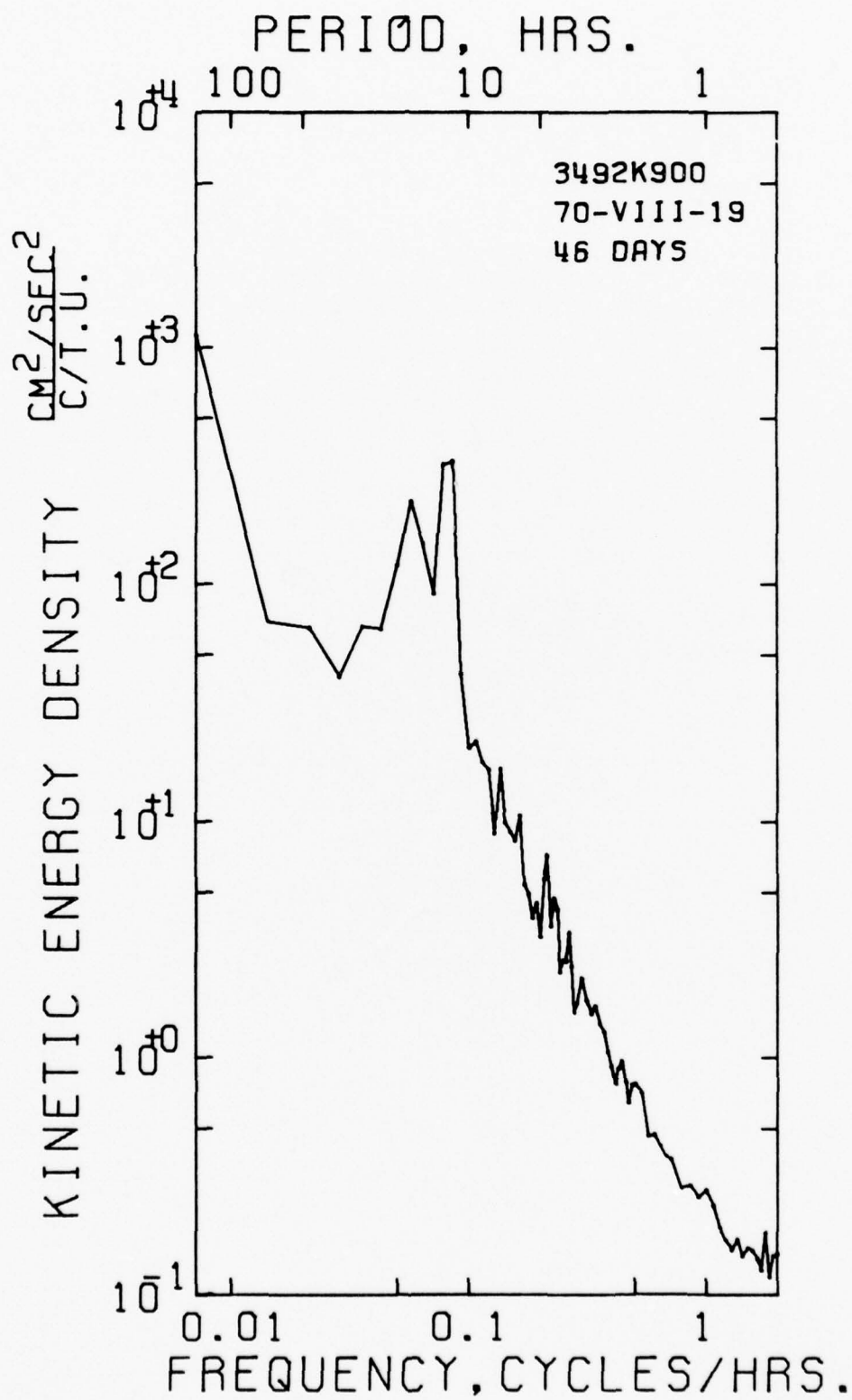
DATA/ 3492K900

```
*****
VARIABLE *          EAST          NORTH          SPEED
UNITS    *          MM/S          MM/S          MM/S
*****
MEAN      =          -18.655          -1.700          64.237
STD. ERR. =           .866           .603           .538
VARIANCE  =        3434.955        1465.466        1324.891
STD. DEV. =         58.608         40.810         36.399
KURTOSIS  =          2.826          4.464          2.758
SKEWNESS  =           .323           .178           .578
MINIMUM   =        -173.763        -221.620         5.426
MAXIMUM   =         150.613         179.608        232.993
*****
```

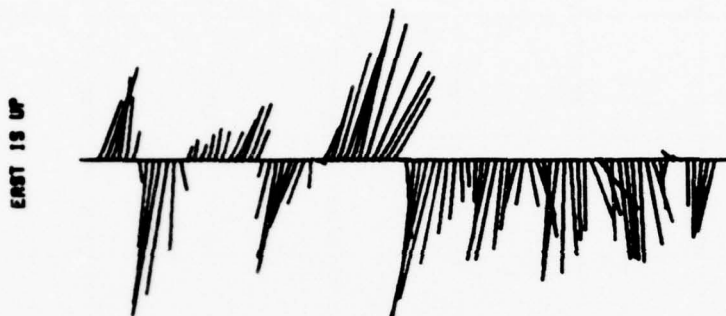
\*\*\*\*\*
EAST & NORTH
\*\*\*\*\*

```
COVARIANCE      =          -258.512
STD. ERR. OF COVARIANCE      =           38.308
STD. DEV. OF COVARIANCE      =        2543.351
CORRELATION COEFFICIENT      =           .108
VECTOR MEAN      =          18.733
VECTOR VARIANCE   =        2550.210
VECTOR STD. DEV.  =          50.500
```

```
*****
* SAMPLE SIZE = 4533 PRINTS
*
* SPANNING RANGE
* FROM 70-VIII-19 19.30.55
* TO 70-X-06 13.00.55
*
* DURATION 47.73 DAYS
*****
```

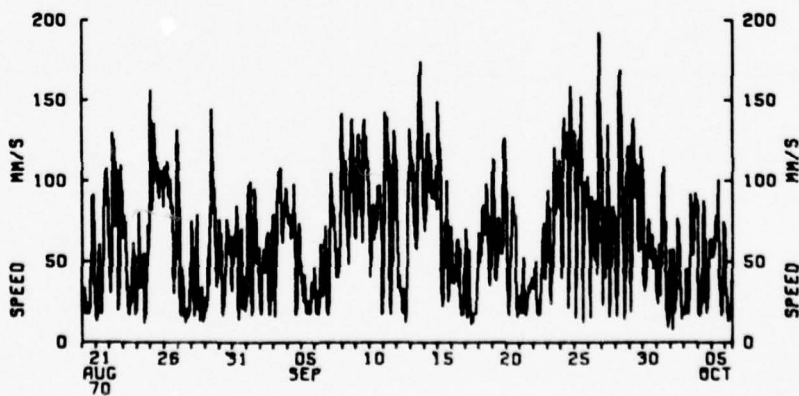


21 26 31 05 10 15 20 25 30 05  
AUG 70 SEP OCT

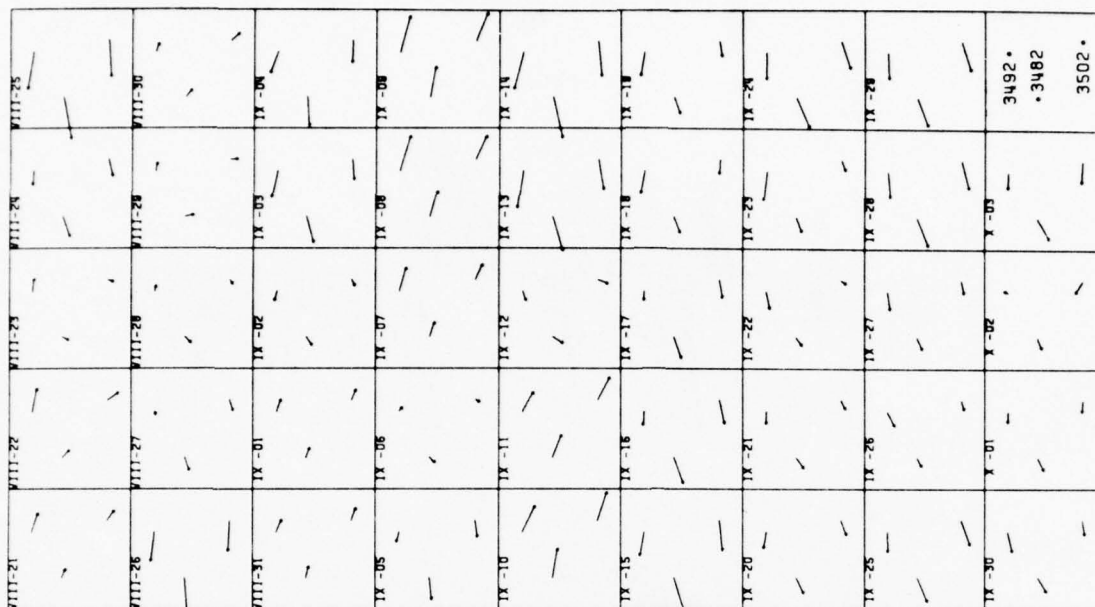


MM/SEC  
0 5 100

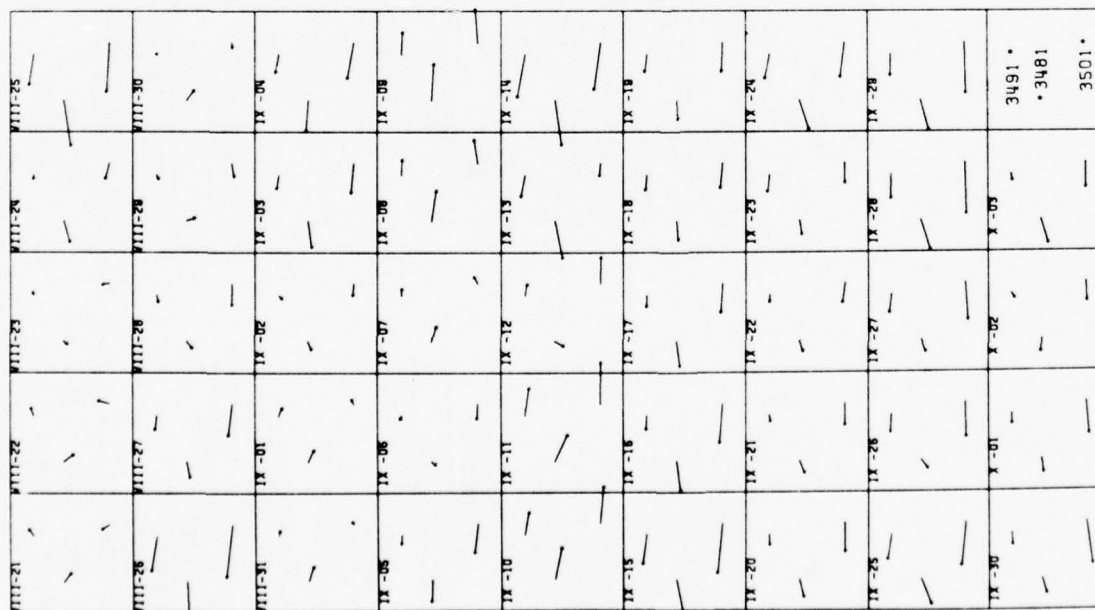
3492K



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mm/sec  
0  
mm



Consecutive daily vectors plotted by position from moorings  
348, 349 and 350 for both instrument levels

MOORING NO. 350

Lat. 39° 49.6'N Long. 70° 56.0'W

Set August 19, 1970

Set by J. Gifford

Ship R. V. Knorr Cruise 8

Recovered December 4, 1970

Recovered by R. Heinmiller

Ship R. V. Knorr Cruise 17

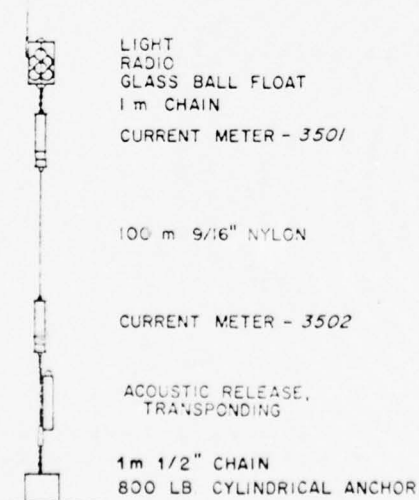
Mooring type - Bottom

Purpose of mooring

Internal wave measurements across  
the continental slope with moorings  
348 and 349

<u>Data</u> <u>No.</u>	<u>Instr.</u> <u>Type</u>	<u>Depth</u> <u>(m)</u>
3501*	Model 850	888
3502*	Model 850	990
Water depth		993

Comments



Data number 3501

Instrument No.: M-223

Type: Model 850

Depth: 888 m

Water depth: 993 m

Start time: 70-VIII-19 20.45.37

Stop time: 70-X-12 13.15.37

Duration: 53d 16h 30m

Sampling scheme: Interval

time between strobes = 5.27 seconds

no. of strobes per interval = 15

interval time = 900 seconds

COMMENTS:

DATA/ 35010800

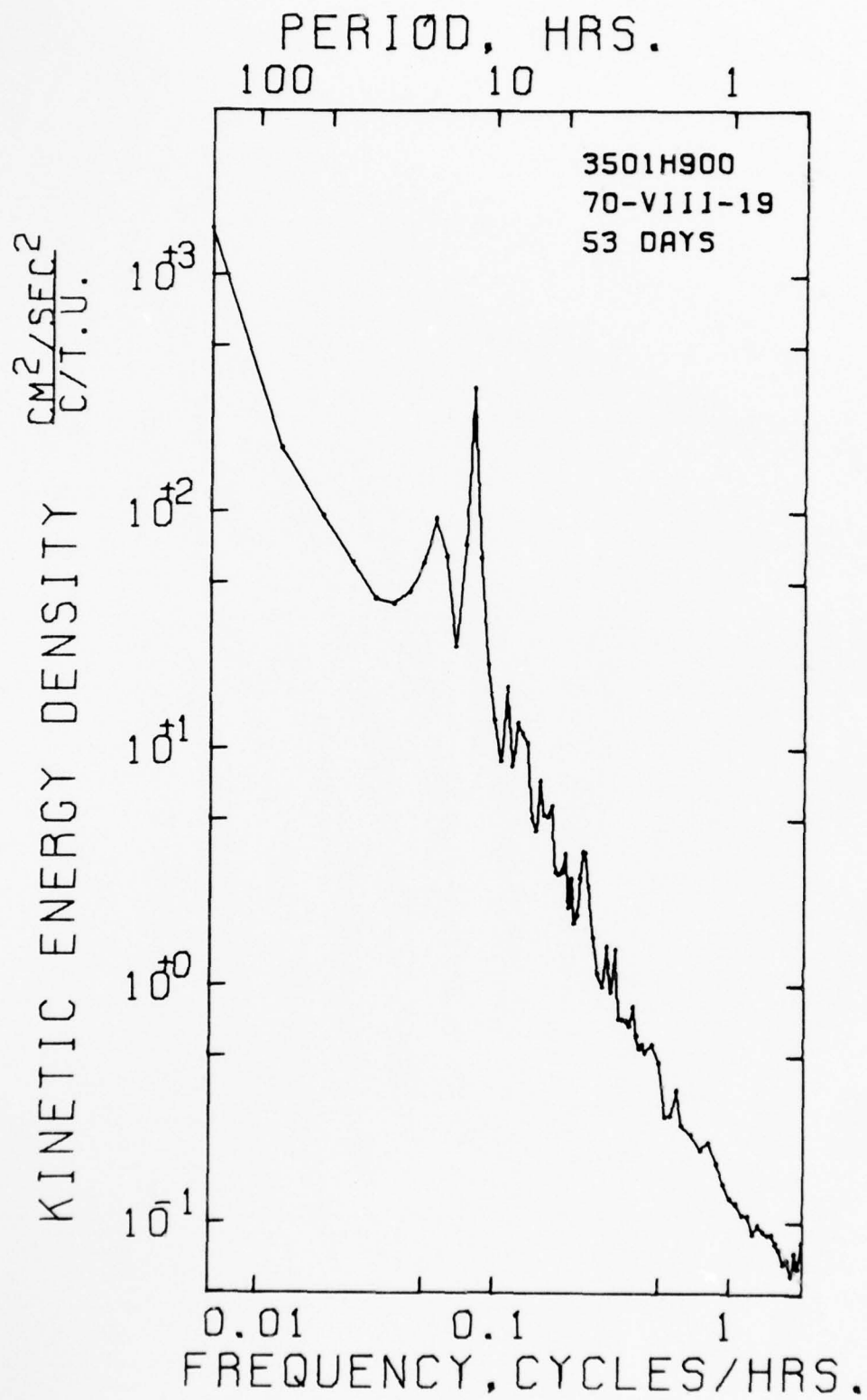
```
*****
VARIABLE *          EAST          NORTH          SPEED
UNIT *          MM/SEC          MM/SEC          MM/SEC
*****
MEAN =          -46.779          3.505          77.692
STD. ERR. =          .912          .441          .532
VARIANCE =          4243.881          1004.784          1459.266
STD. DEV. =          65.497          31.698          38.200
KURTOSIS =          2.893          3.343          2.746
SKEWNESS =          .512          .381E-2          .429
MINIMUM =          -212.961          -110.465          3.000
MAXIMUM =          146.823          114.744          220.000
*****
```

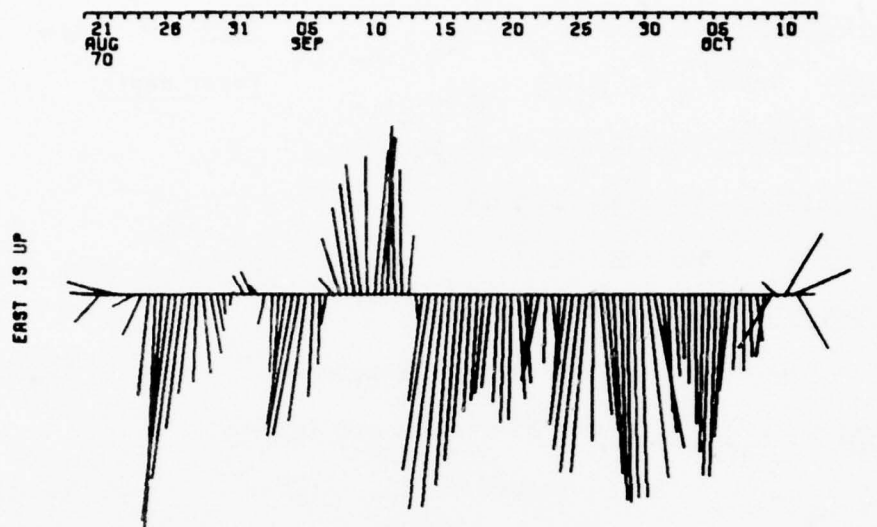
\*\*\*\*\*
EAST X NORTH
\*\*\*\*\*

```
COVARIANCE =          -147.261
STD. ERR. OF COVARIANCE =          33.328
STD. DEV. OF COVARIANCE =          2392.667
CORRELATION COEFFICIENT =          -.709E-1
VECTOR MEAN =          46.911
VECTOR VARIANCE =          2647.338
VECTOR STD. DEV. =          51.452
*****
```

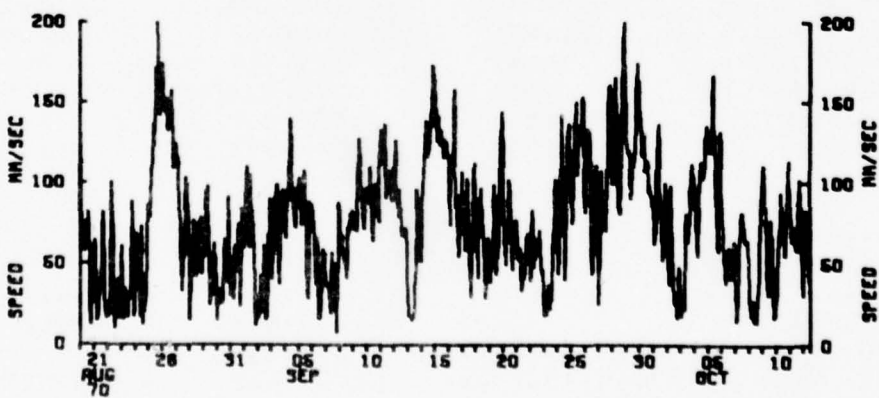
```
*****
* SAMPLE SIZE = 5155 PRINTS
*
* SPANNING RANGE
* FROM 70-VIII-19 20.45.37
* TO 70-X-12 13.15.37
*
* DURATION 53.63 DAYS
*****
```







3501H



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Data number 3502

Instrument No.: M-234

Type: Model 850

Depth: 990 m

Water depth: 993 m

Start time: 70-VIII-19 20.45.37

Stop time: 70-XI-16 23.30.37

Duration: 89d 2h 45m

Sampling scheme: Interval

time between strobes = 5.27 seconds

no. of strobes per interval = 15

interval time = 900 seconds

COMMENTS:

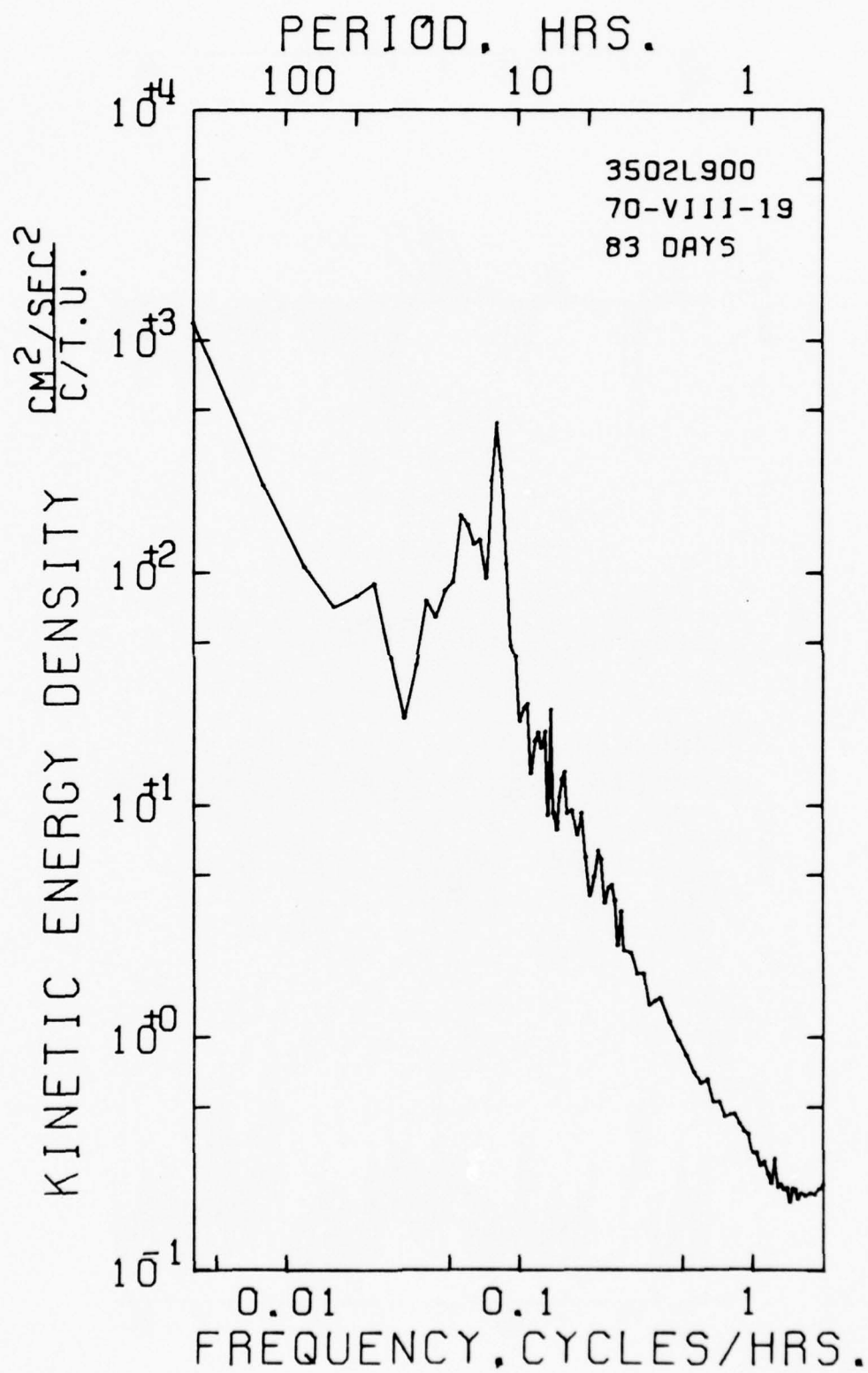
DATA/ 3502L900

```
*****
VARIABLE *      EAST      NORTH      SPEED
UNITS    *      MM/SEC    MM/SEC    MM/SEC
*****
MEAN      *      -33.640    -11.135    66.381
STD. ERR. *          .556         .449     .378
VARIANCE  *      2649.375    1721.135    1219.759
STD. DEV. *          51.472     41.487     34.925
KURTOSIS  *          3.147         3.117     2.913
SKEWNESS  *          .273         .433E-2     .558
MINIMUM   *      -207.000    -152.000     15.000
MAXIMUM   *          166.000     144.956    215.000
*****
```

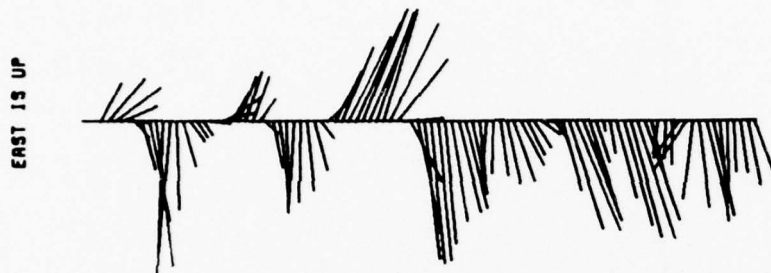
\*\*\*\*\*  
EAST & NORTH

```
*****
COVARIANCE *      -133.841
STD. ERR.  *      29.935
OF COVARIANCE *
STD. DEV.  *      2768.948
OF COVARIANCE *
CORRELATION *      -.627E-1
COEFFICIENT *
VECTOR MEAN *      35.435
VECTOR VARIANCE *      2185.255
VECTOR STD. DEV. *      46.747
*****
```

```
*****
* SAMPLE SIZE = 8556 PRINTS
*
* SPANNING RANGE
* FROM 70-VIII-19 20.45.37
* TO 70-XI-16 23.30.37
*
* DURATION 89.11 DAYS
*****
```

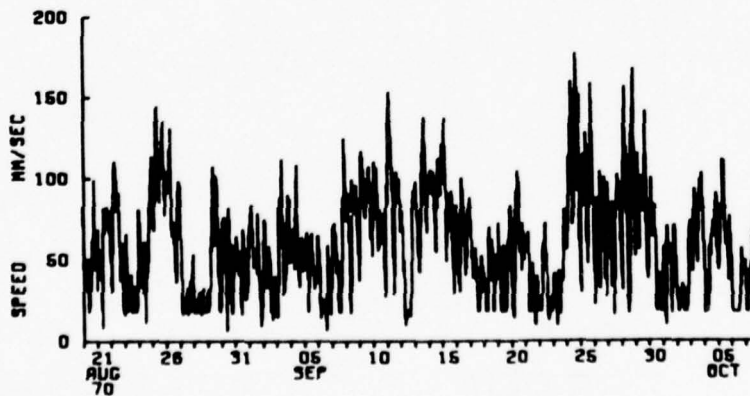


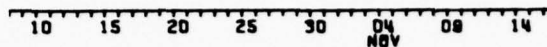
21 26 31 05 10 15 20 25 30 05  
AUG 70 SEP OCT



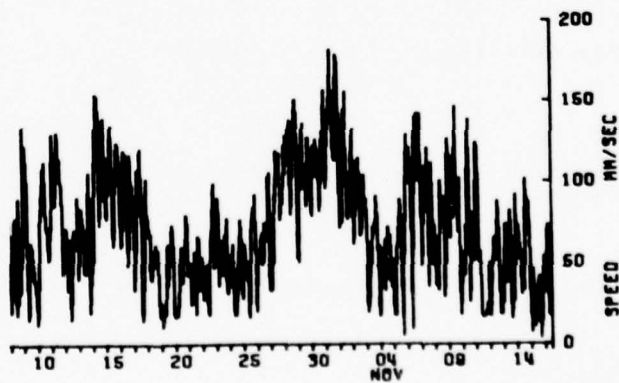
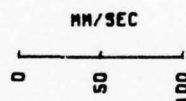
MM/SEC  
0 50 100

3502L

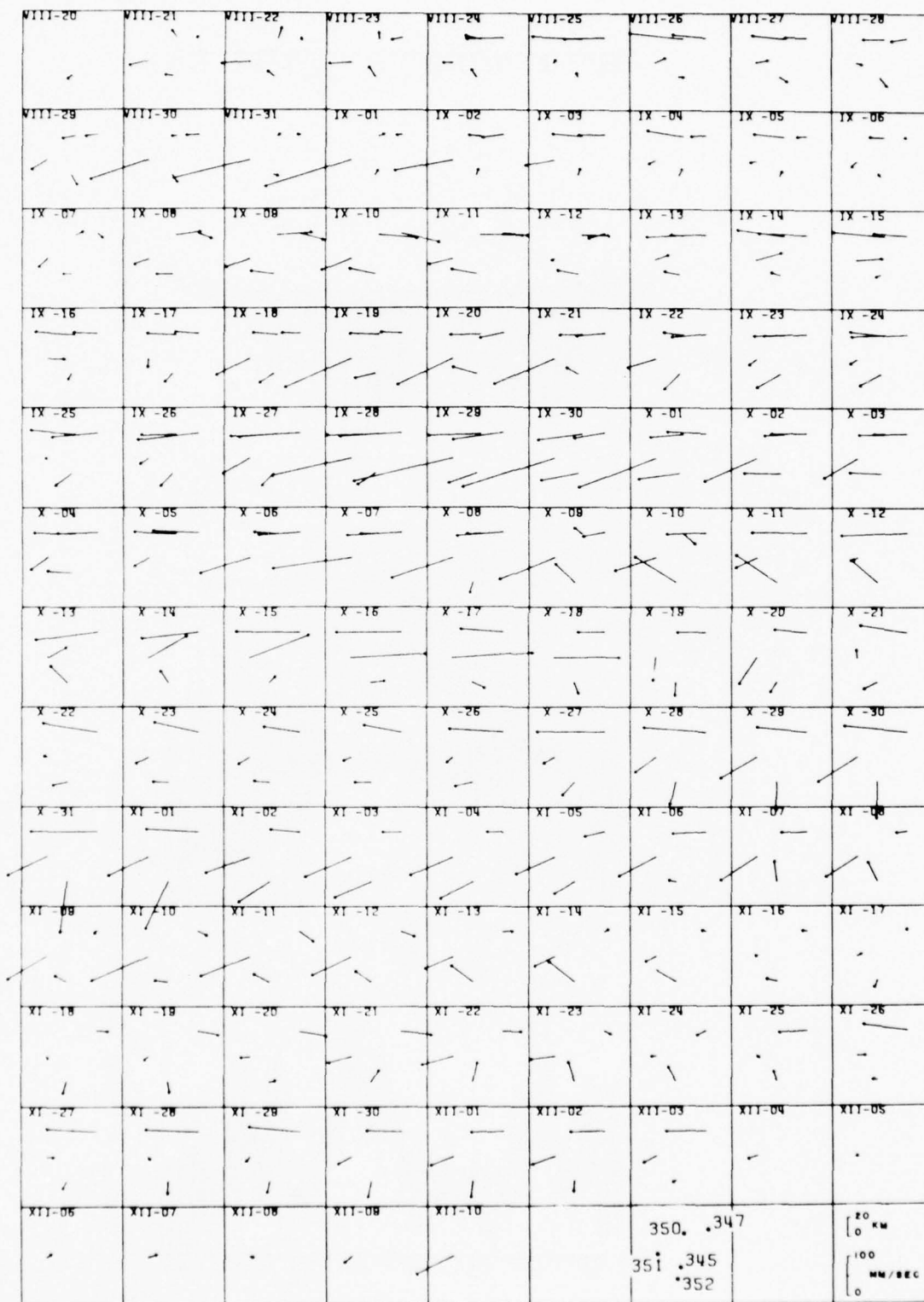




3502L







Consecutive daily vectors plotted by position from moorings 345, 347, 350, 351 and 352 for the top instrument level only

MOORING NO. 351  
Lat. 39° 36.6'N Long. 71° 15.0'W

Set August 19, 1970

Set by J. Gifford

Ship R. V. Knorr Cruise 8

Recovered December 11, 1970

Recovered by R. Heinmiller

Ship R. V. Knorr Cruise 17

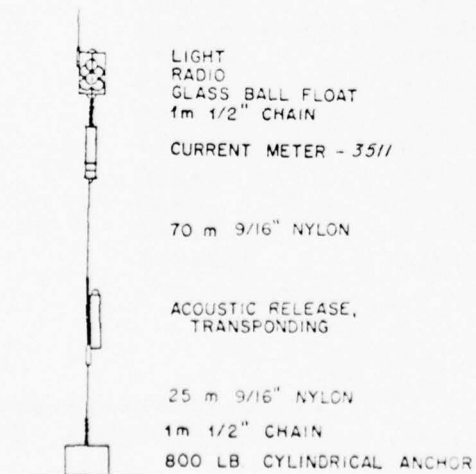
Mooring type - Bottom

Purpose of mooring

To study the topographical wave  
motion across the Slope

Data No.	Instr. Type	Depth (m)
3511*	Model 850	2052
Water depth		2150

#### Comments



Data number 3511

Instrument No.: M-215

Type: Model 850

Depth: 2052 m

Water depth: 2150 m

Start time: 70-VIII-20 07.00.37

Stop time: 70-XII-11 13.30.37

Duration: 113d 6h 30m

Sampling scheme: Interval

time between strobes = 5.27 seconds

no. of strobes per interval = 16

interval time = 1800 seconds

COMMENTS:

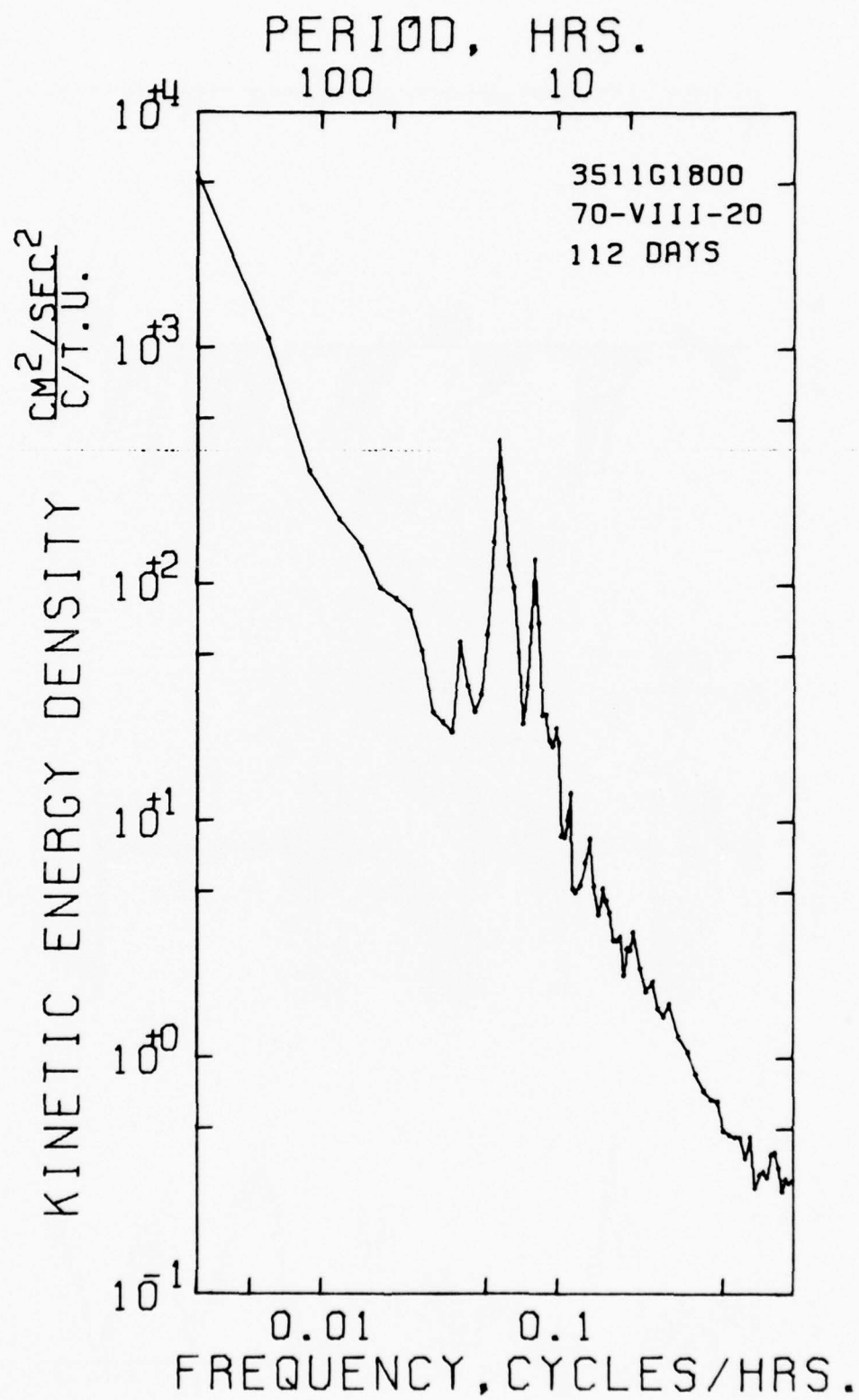
DATA/ 3511G1800

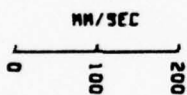
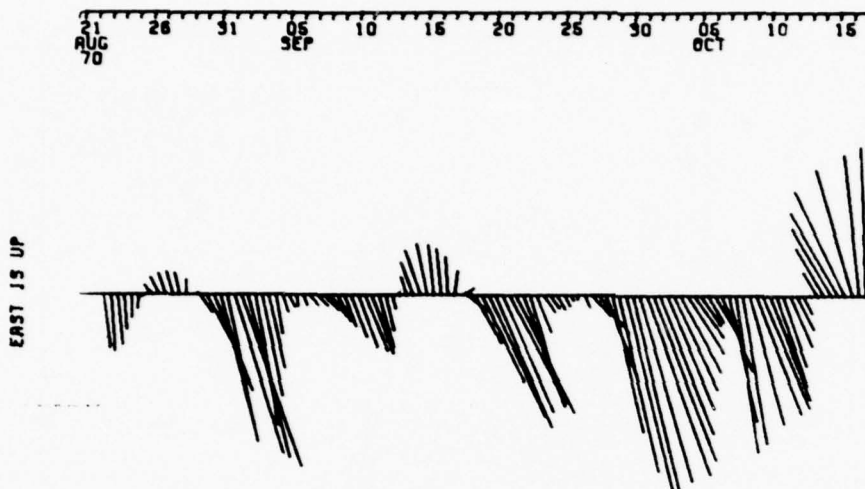
```
*****
VARIABLE *          EAST          NORTH          SPEED
UNITS    *          MM/SEC        MM/SEC        MM/SEC
*****
MEAN      =          -46.794        -21.038        83.677
STD. ERR. =           1.131           .511           .859
VARIANCE  =        6955.685        1422.509        4008.632
STD. DEV. =         83.401         37.716         63.314
KURTOSIS  =          3.998          3.581          3.200
SKEWNESS  =           .113           .190           .949
MINIMUM   =        -303.136        -172.613         7.763
MAXIMUM   =         237.964         120.210        327.576
```

\*\*\*\*\*
EAST & NORTH
\*\*\*\*\*

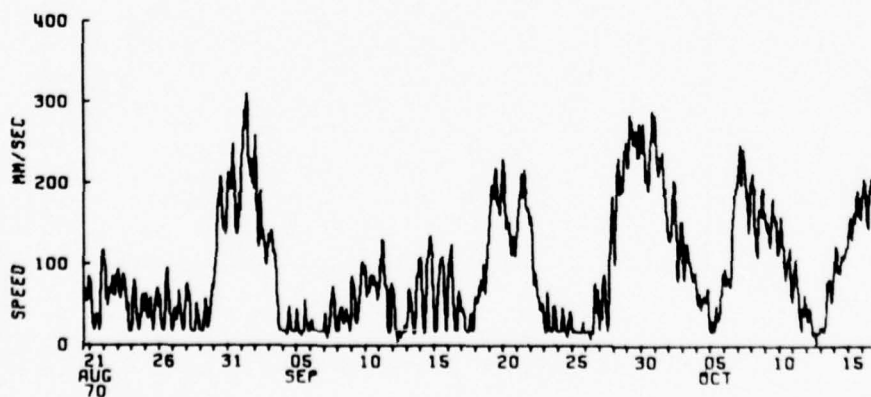
```
COVARIANCE      =      1730.548
STD. ERR. OF COVARIANCE =      64.587
STD. DEV. OF COVARIANCE =    4762.800
CORRELATION COEFFICIENT =      .550
VECTOR MEAN      =      51.306
VECTOR VARIANCE   =    4189.097
VECTOR STD. DEV.  =      64.723
```

```
*****
* SAMPLE SIZE = 5438 POINTS
*
* SPANNING RANGE
* FROM 70-VIII-20 07.00.37
* TO 70-XII-11 13.30.37
*
* DURATION 113.27 DAYS
```





35116

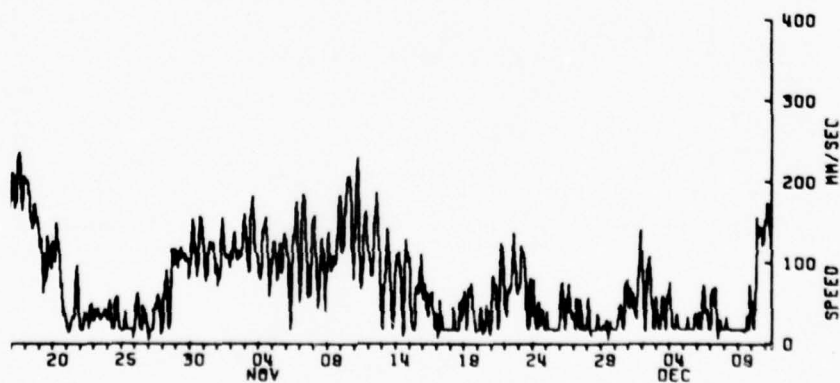
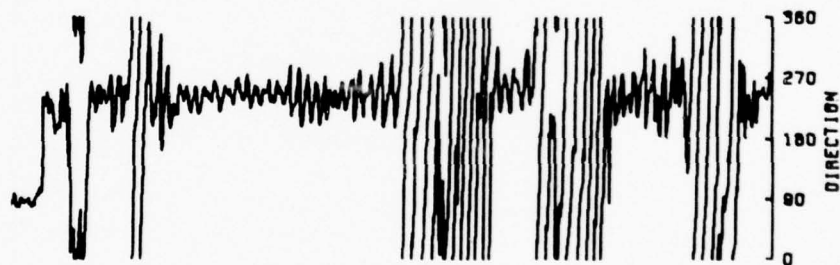


20 25 30 04 NOV 08 14 18 24 28 04 DEC 08

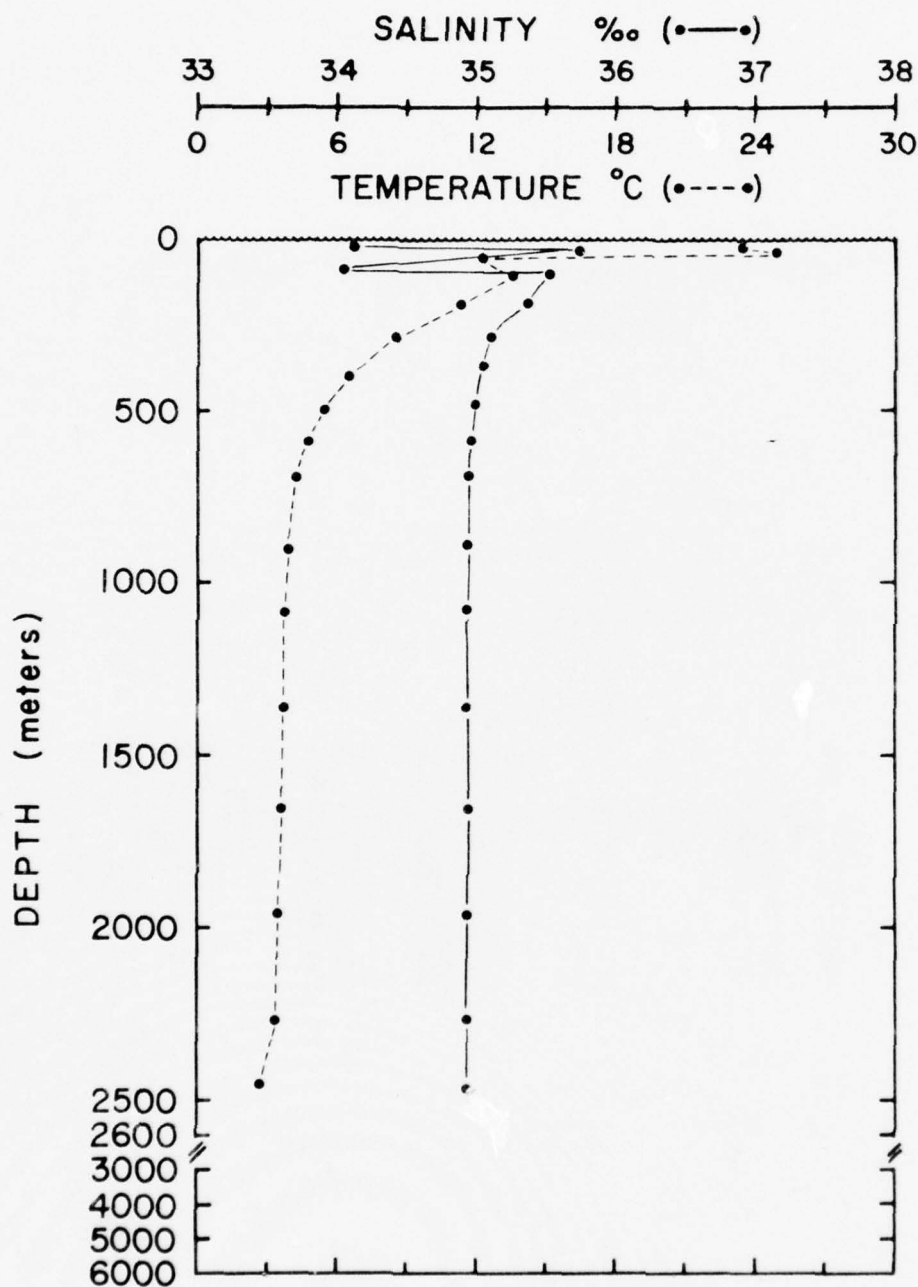


3511G

MM/SEC  
0 100 200







KN - 013 - 039

LAT. 39° 30.0' N

LONG. 71° 00.0' W

DATE 70-10-14

MOORING NO. 352

Lat. 39° 23.3'N Long. 71° 01.4'W

Set October 6, 1970

Set by D. Moller

Ship R. V. Knorr Cruise 13

Recovered December 11, 1970

Recovered by R. Heinmiller

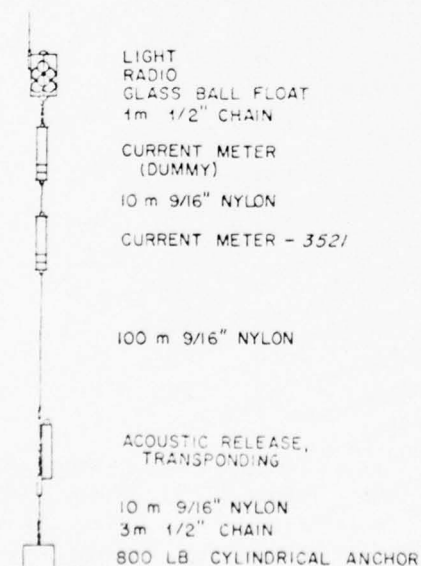
Ship R. V. Knorr Cruise 17

Mooring type - Bottom

Purpose of mooring

Low frequency wave correlation  
across the Gulf Stream with mooring 353

<u>Data</u> <u>No.</u>	<u>Instr.</u> <u>Type</u>	<u>Depth</u> <u>(m)</u>
3521*	Model 850	2394
Water depth		2509



Comments

Data number 3521

Instrument No.: M-213

Type: Model 850

Depth: 2394 m

Water depth: 2509 m

Start time: 70-X-06 22.45.57

Stop time: 70-XII-04 22.45.57

Duration: 59d

Sampling scheme: Interval

time between strobes = 5.27 seconds

no. of strobes per interval = 24

interval time = 900 seconds

COMMENTS:

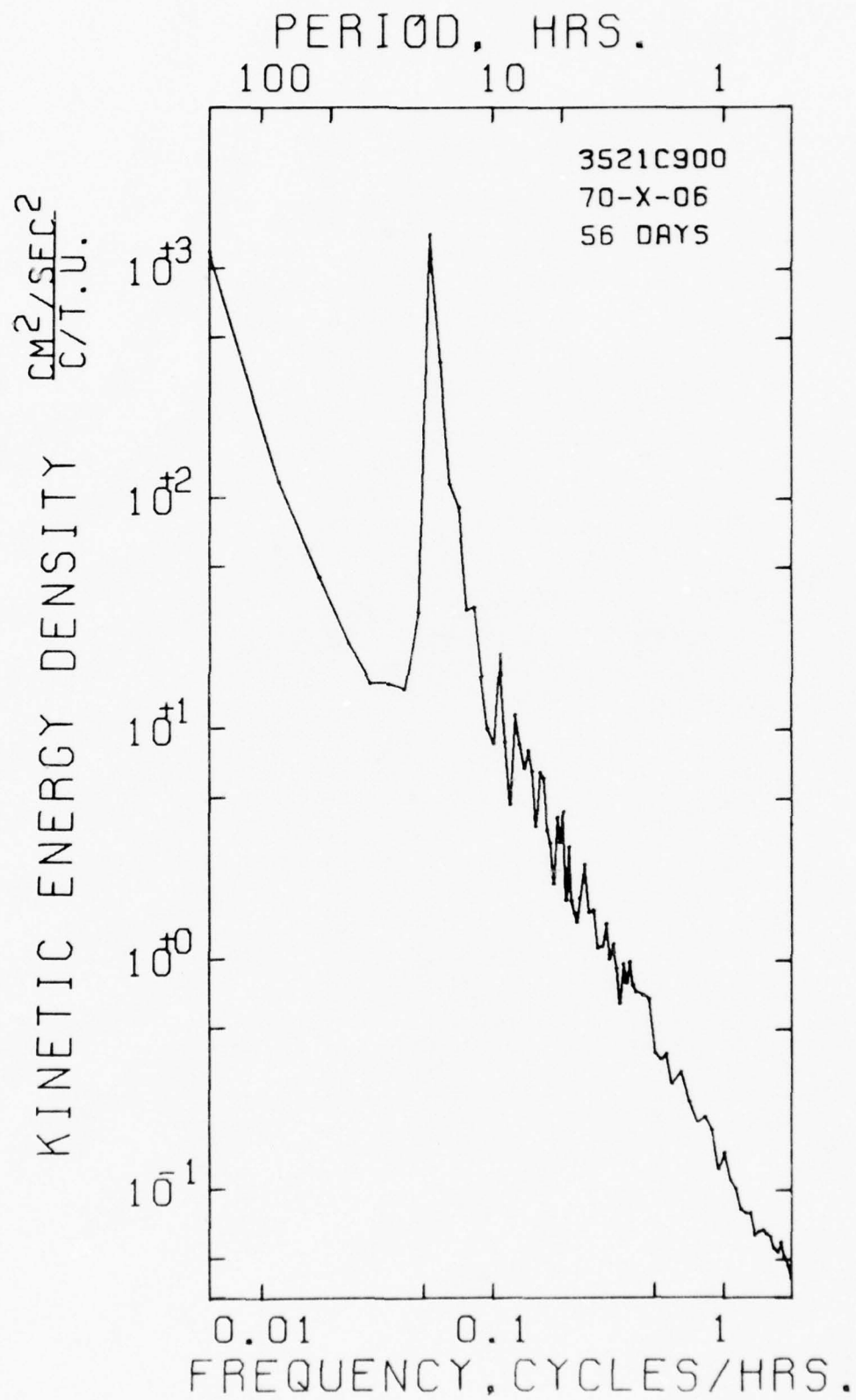
DATA/ 3521C900

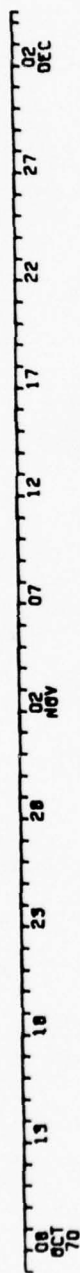
```
*****
VARIABLE *      EAST      NORTH      SPEED
UNITS *      MM/SEC      MM/SEC      MM/SEC
*****
MEAN =      -23.122      -5.339      67.647
STD. ERR. *      .646      .763      .539
VARIANCE *      2362.005      3295.639      1644.624
STD. DEV. *      48.600      57.408      40.554
KURTOSIS *      3.561      3.496      3.066
SKEWNESS *      -.683E-1      .154      .816
MINIMUM =      -190.770      -179.041      16.000
MAXIMUM =      150.355      228.724      229.000
```

\*\*\*\*\*
EAST & NORTH
\*\*\*\*\*

```
COVARIANCE *      -348.033
STD. ERR. OF COVARIANCE *      44.702
STD. DEV. OF COVARIANCE *      3364.562
CORRELATION COEFFICIENT *      -.125
VECTOR MEAN *      23.730
VECTOR VARIANCE *      2228.822
VECTOR STD. DEV. *      53.187
```

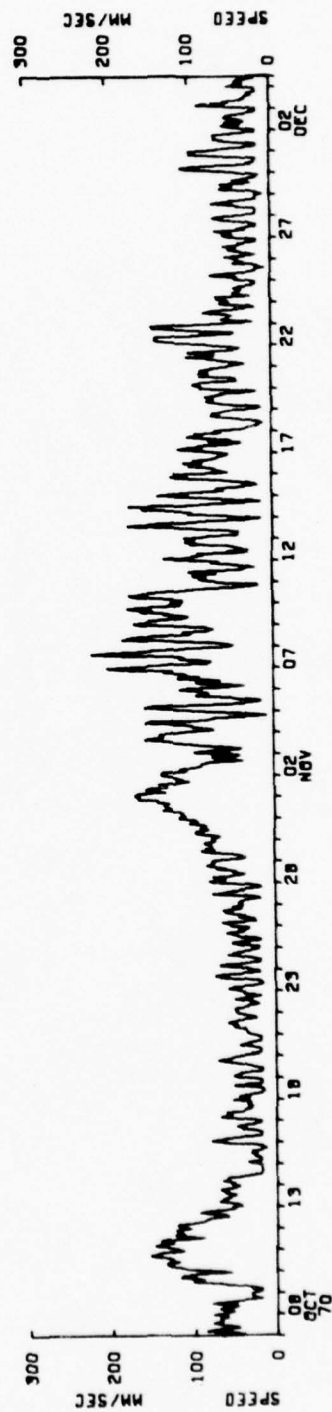
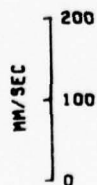
```
*****
* SAMPLE SIZE * 5665 POINTS
*
* SPANNING RANGE
* FROM 70- X -06 22.45.57
* TO 70- XII-04 22.45.57
*
* DURATION 59.00 DAYS
```





NORTH 15 UP

3521C



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MOORING NO. 353  
Lat. 35° 58.0'N Long. 70° 35.0'W

Set October 8, 1970

Set by D. Moller

Ship R. V. Knorr Cruise 13

Recovered December 9, 1970

Recovered by R. Heinmiller

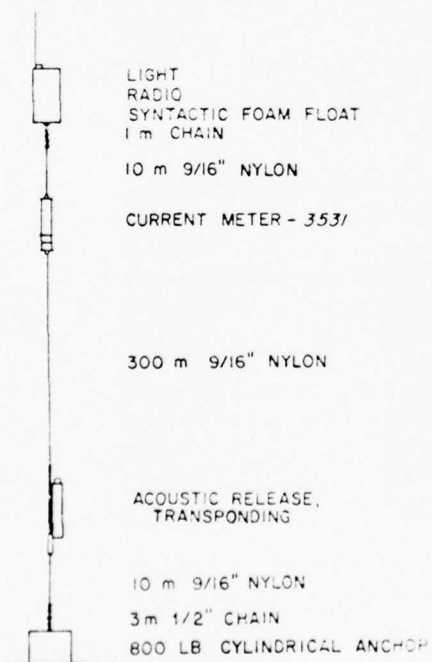
Ship R. V. Knorr Cruise 17

Mooring type - Subsurface

Purpose of mooring

Low frequency wave correlation  
across the Gulf Stream with mooring 352

<u>Data</u> <u>No.</u>	<u>Instr.</u> <u>Type</u>	<u>Depth</u> <u>(m)</u>
3531*	Model 850	4121
Water depth		4436



Comments

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Data number 3531

Instrument No.: M-206

Type: Model 850

Depth: 4121 m

Water depth: 4436 m

Start time: 70-X-08 13.30.58

Stop time: 70-XI-27 02.30.58

Duration: 49d 13h

Sampling scheme: Interval

time between strobes = 5.27 seconds

no. of strobes per interval = 24

interval time = 900 seconds

COMMENTS:

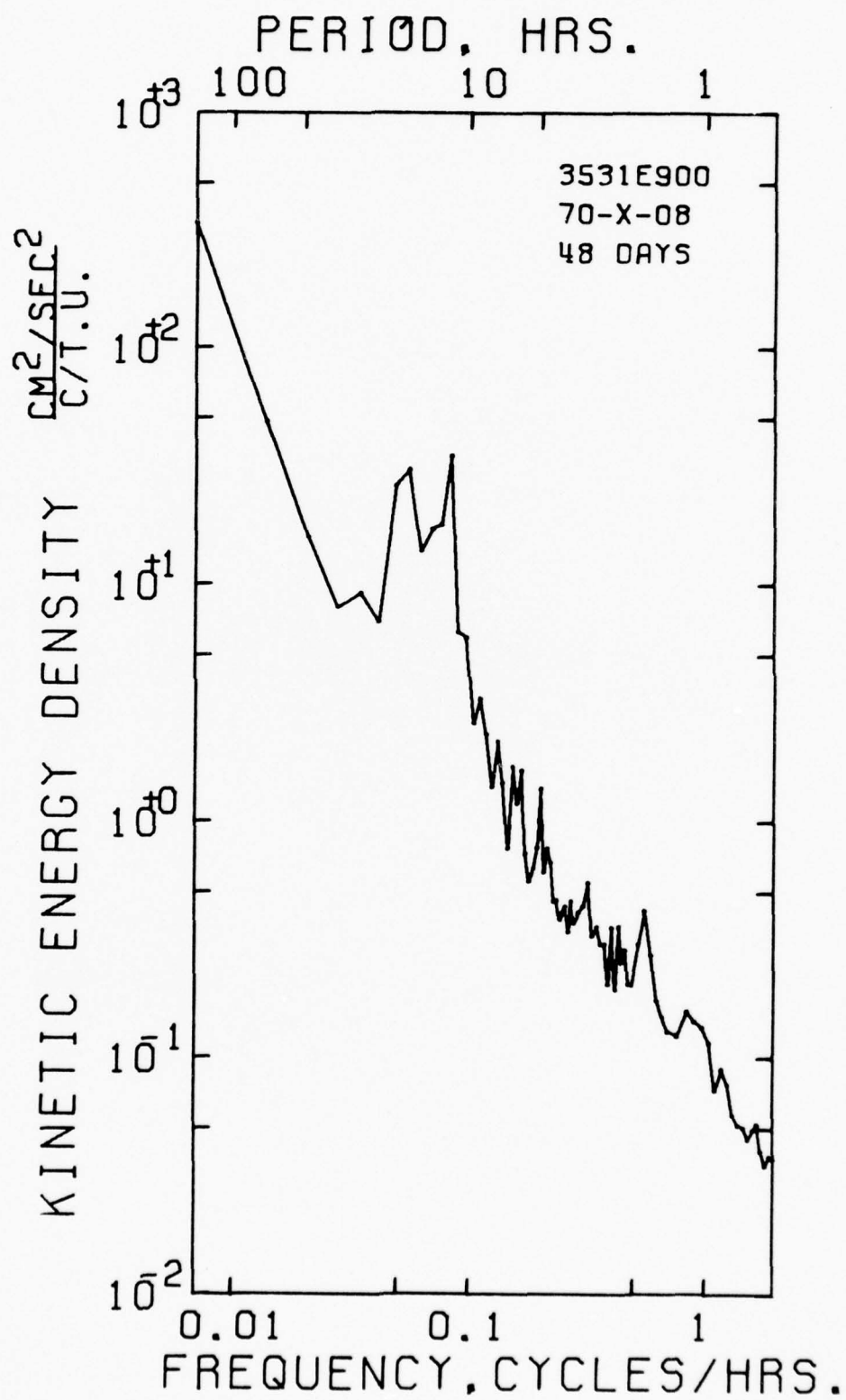
DATA/ 3531F900

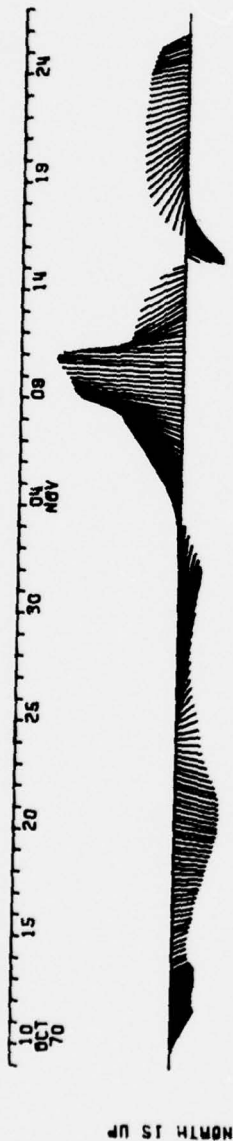
```
*****
VARIABLE *      EAST      NORTH      SPEED
UNITS    *      MM/SEC    MM/SEC    MM/SEC
*****
MEAN      *      16.936      15.828      69.847
STD. ERR. *          .710          .839          .543
VARIANCE  *    2395.356    3350.257    1404.438
STD. DEV. *      48.942      57.881      37.476
KURTOSIS  *      2.593      2.754      2.808
SKEWNESS  *      .497          .789          .762
MINIMUM   *    -93.000     -84.975      17.000
MAXIMUM   *    152.159     198.000     198.000
```

\*\*\*\*\*  
EAST & NORTH

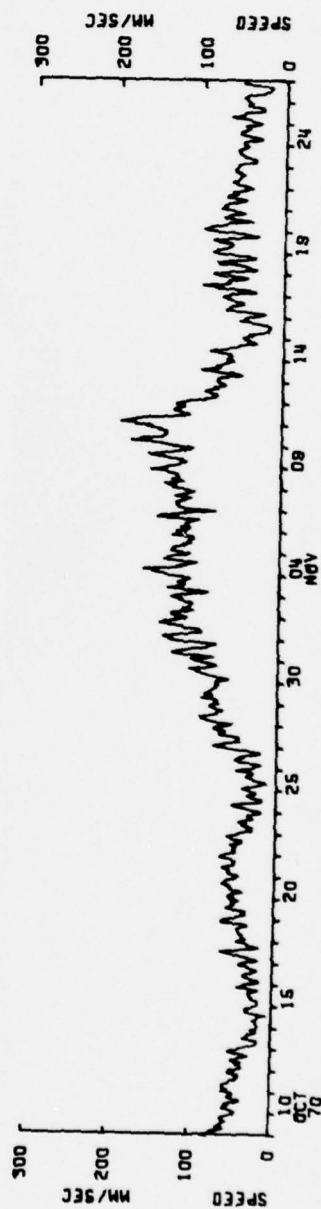
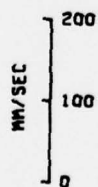
```
*****
COVARIANCE *      40.127
STD. ERR. OF COVARIANCE *      36.591
STD. DEV. OF COVARIANCE *    2523.692
CORRELATION COEFFICIENT *      .142E-1
VECTOR MEAN *      23.181
VECTOR VARIANCE *    2872.806
VECTOR STD. DEV. *      53.599

*****
* SAMPLE SIZE * 4757 POINTS
*
* SPANNING RANGE
* FROM 70- X -08 13.30.58
* TO 70- XI -27 02.30.58
*
* DURATION 49.54 DAYS
```

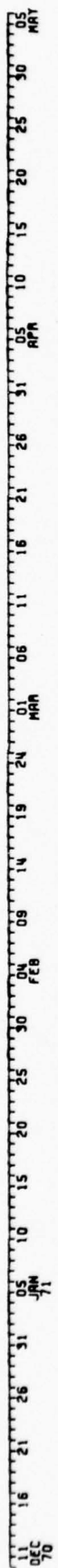




3531E



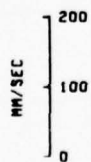
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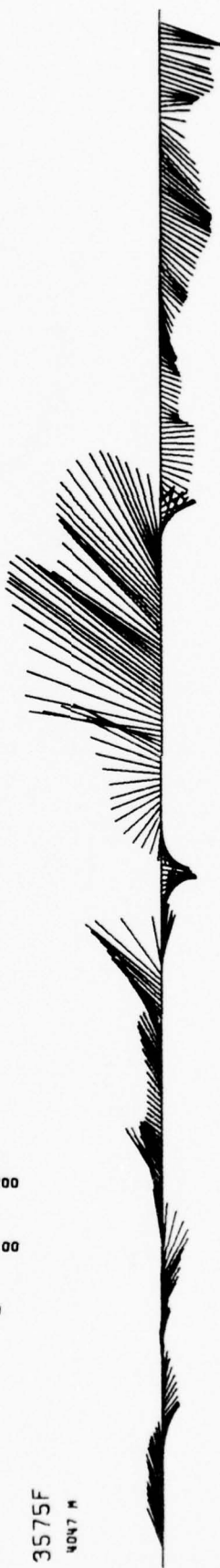
3574F  
3086 M



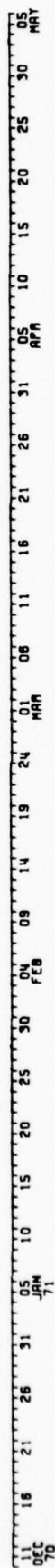
NORTH IS UP



3575F  
4047 M



NORTH IS UP



MOORING NO. 357

Lat. 35° 58.9'N Long. 70° 36.8'W

Set December 9, 1970

Set by R. Heinmiller

Ship R. V. Knorr Cruise 17

Recovered May 6, 1971

Recovered by J. Gifford

Ship R. V. Knorr Cruise 20

Mooring type - Intermediate

Purpose of mooring

- A) Measurements at Site J
- B) Low frequency wave correlation across the Gulf Stream with mooring 358



RADIO FLOAT

8 m 1/4" CHAIN WITH 8 GLASS BALLS

CURRENT METER - 3571

DEPTH RECORDER - 3572

922 m 3/8" DACRON

INCLINOMETER - 3573

6 m 1/4" CHAIN WITH 8 GLASS BALLS

CURRENT METER - 3574

914 m 3/8" DACRON

6 m 3/8" CHAIN WITH 7 GLASS BALLS

CURRENT METER - 3575

290 m 9/16" NYLON

6 m 3/8" CHAIN WITH 7 GLASS BALLS

TENSION METER - 3576

ACOUSTIC RELEASE,  
TRANSPONDING

20 m 3/4" NYLON

10 m 1/2" CHAIN

STIMSON ANCHOR, 3,500 LBS

Data No.	Instr. Type	Depth (m)
3571	Model 850	2056
3572	Depth Rec.	2057
3573	Incl.	3058
3574*	Model 850	3066
3575*	Model 850	4074
3576	Tens.	4391

Water depth 4425

#### Comments

3571 - stuck compass.

Data number 3574

Instrument No.: M-212

Type: Model 850

Depth: 3066 m

Water depth: 4425 m

Start time: 70-XII-09 23.30.37

Stop time: 71-V- 06 05.30.37

Duration: 147d 6h

Sampling scheme: Interval

time between strobes = 5.27 seconds

no. of strobes per interval = 16

interval time = 1800 seconds

COMMENTS:

DATA/ 3574F1800

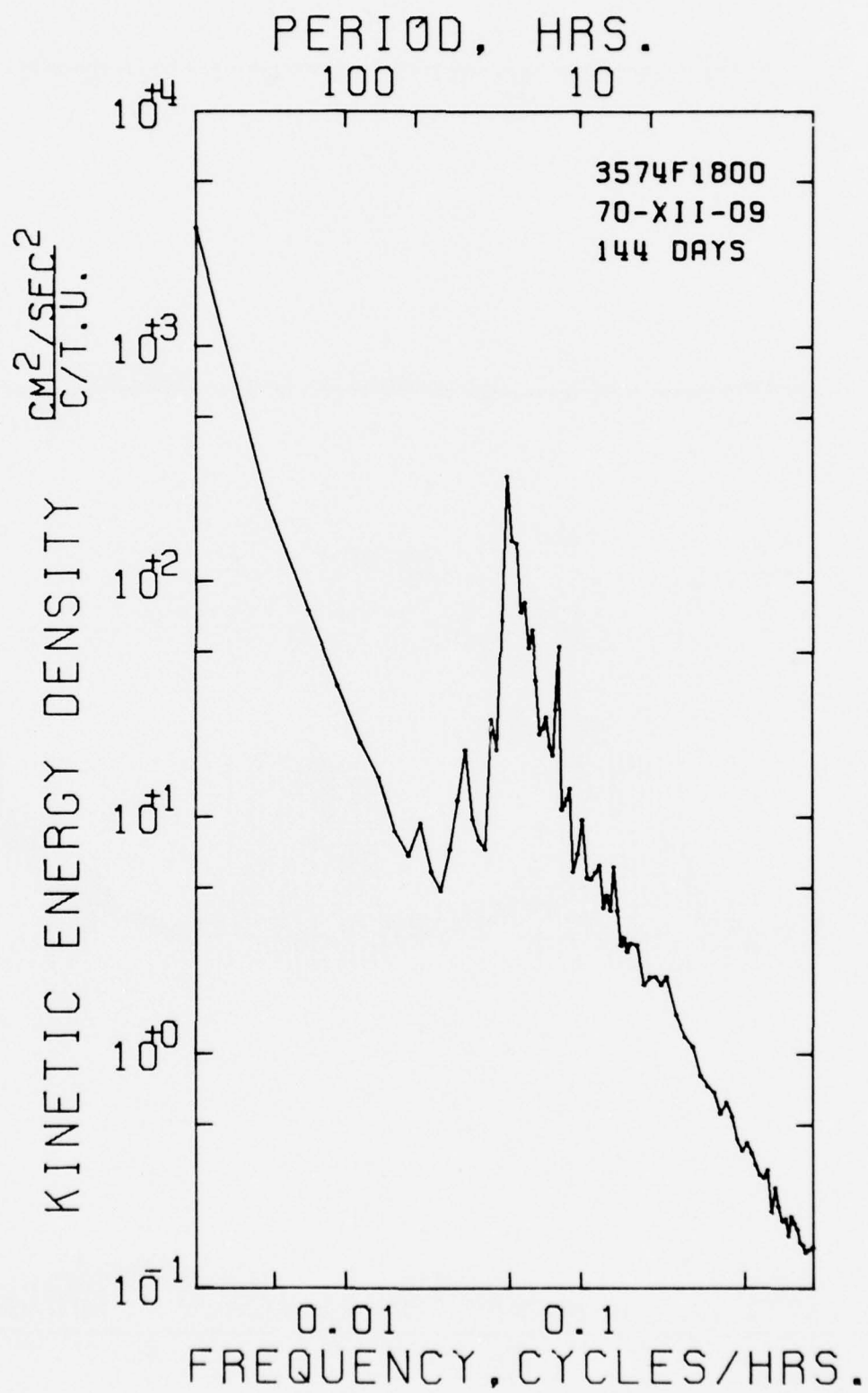
```
*****
VARIABLE *      EAST      NORTH      SPEED
UNITS    *      MM/SEC    MM/SEC      MM/SEC
*****
MEAN      *      21.842      3.278      61.745
STD. ERR. *      .651      .614      .575
VARIANCE  *      2999.845    2661.451    2336.720
STD. DEV. *      54.771      51.589      48.340
KURTOSIS  *      3.329      5.315      5.262
SKEWNESS  *      .693      1.142      1.449
MINIMUM   *     -101.885    -146.137      5.000
MAXIMUM   *      230.046      232.536     283.000
```

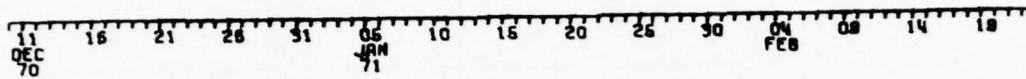
\*\*\*\*\*
EAST & NORTH

```
*****
COVARIANCE *      1484.777
STD. ERR. OF COVARIANCE *      55.592
STD. DEV. OF COVARIANCE *      4674.014
CORRELATION COEFFICIENT *      .525
VECTOR MEAN *      22.086
VECTOR VARIANCE *      2830.648
VECTOR STD. DEV. *      53.204
```

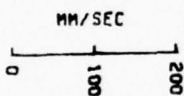
```
*****
* SAMPLE SIZE = 7069 POINTS
*
* SPANNING RANGE
* FROM 70- XII-09 23.30.37
* TO 71- V -06 05.30.37
*
* DURATION 147.25 DAYS
```



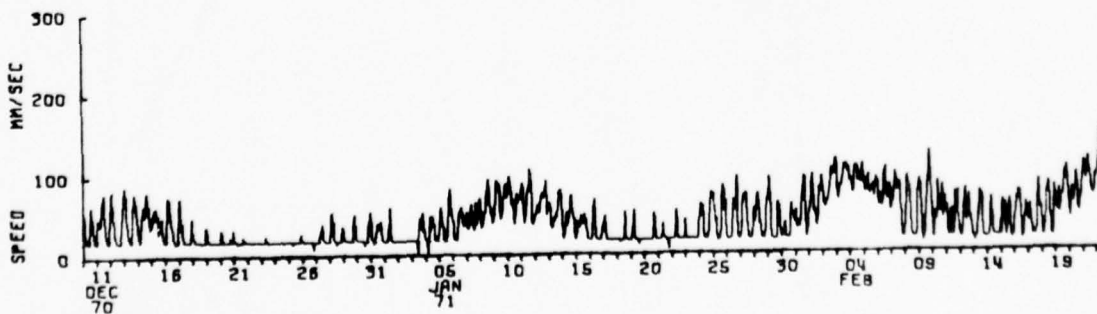




NORTH IS UP



3574F

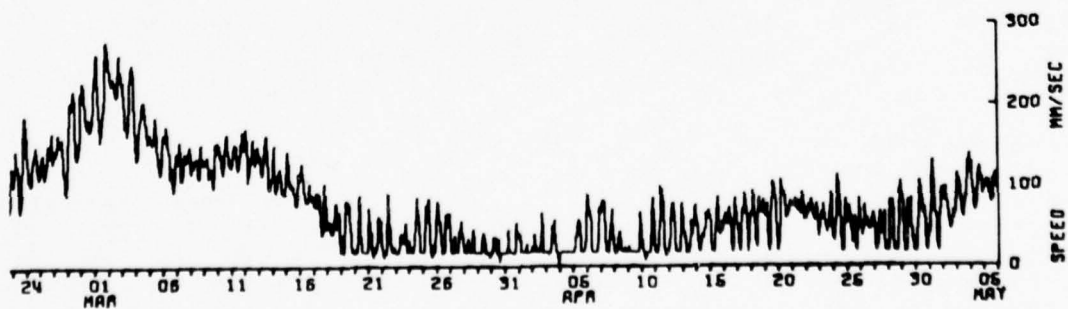
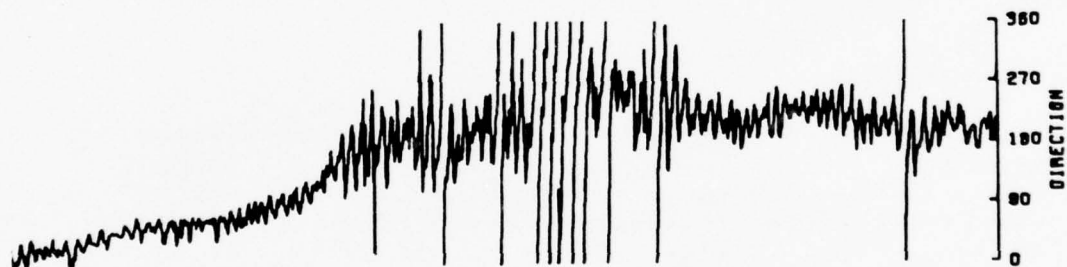


24 01 08 11 18 21 28 31 05 10 16 20 26 30 05  
MAR APR MAY



3574F

MM/SEC  
0 100 200



Data number 3575

Instrument No.: M-227

Type: Model 850

Depth: 4074 m

Water depth: 4425 m

Start time: 70-XII-10 08.30.37

Stop time: 71-V-06 06.30.37

Duration: 146d 22h

Sampling scheme: Interval

time between strobes = 5.27 seconds

no. of strobes per interval = 16

interval time = 1800 seconds

COMMENTS:

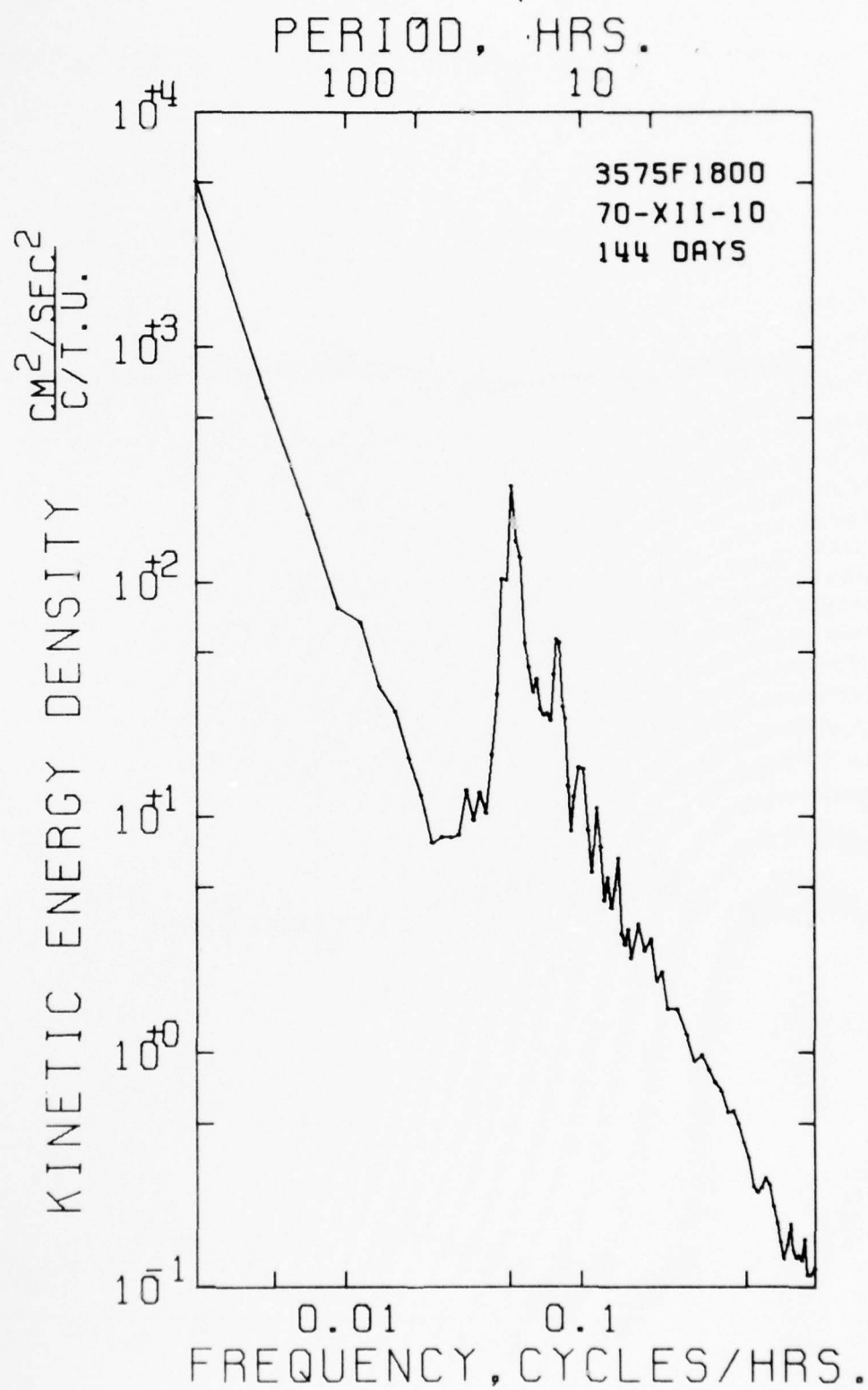
DATA/ 3575F1800

```
*****
VARIABLE *          EAST          NORTH          SPEED
UNITS    *          MM/SEC        MM/SEC        MM/SEC
*****
MEAN      *          36.286         11.106         91.354
STD. ERR. *           .812          .926          .734
VARIANCE  *        4648.009        6052.928        3795.297
STD. DEV. *         68.176         77.801         61.606
KURTOSIS  *         2.883          4.176          5.548
SKEWNESS  *          .459          1.185          1.707
MINIMUM   *        -107.216        -148.283         11.000
MAXIMUM   *         260.239         291.022        324.000
*****
```

\*\*\*\*\*
EAST & NORTH
\*\*\*\*\*

```
COVARIANCE *          3434.686
STD. ERR.  *          103.746
STD. DEV.  *          8712.817
CORRELATION *           .648
VECTOR MEAN *           37.947
VECTOR VARIANCE *        5350.468
VECTOR STD. DEV. *         73.147
```

```
*****
* SAMPLE SIZE * 7053 PRINTS
*
* SPANNING RANGE
* FROM 70- XII-10 08.30.37
* TO 71- V 06 06.30.37
*
* DURATION 146.92 DAYS
*****
```



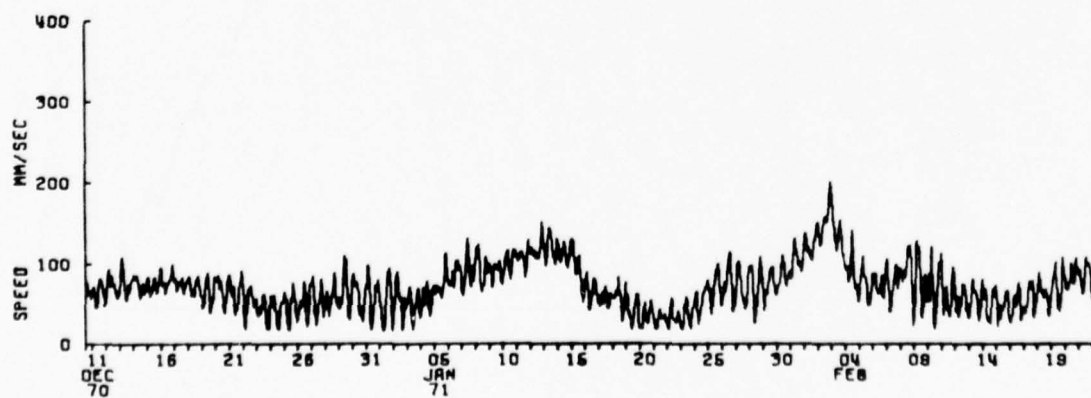
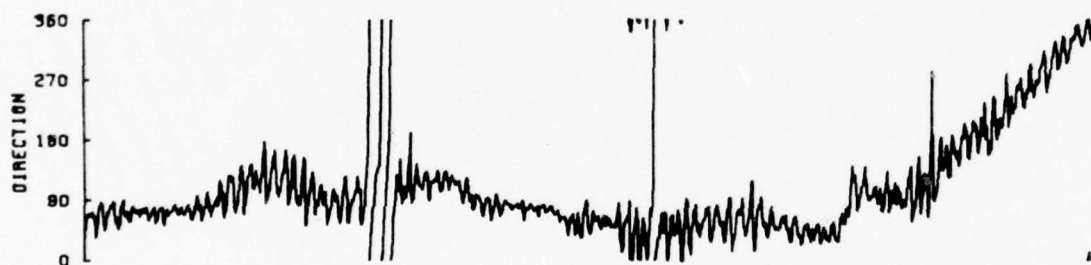
11 16 21 26 31 05 10 15 20 25 30 04 08 14 18  
DEC 70 JAN 71 FEB

NORTH IS UP



MM/SEC  
0 100 200

3575F





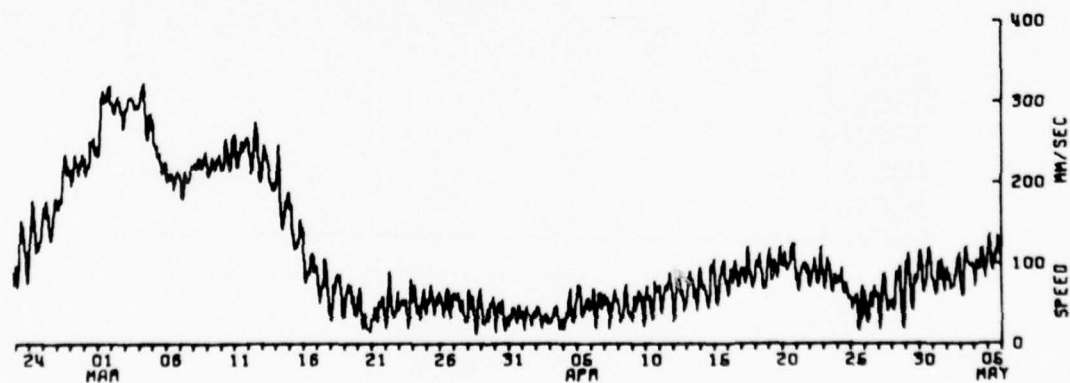
24 01 08 11 18 21 26 31 05 10 16 20 26 30 05  
MAR APR MAY

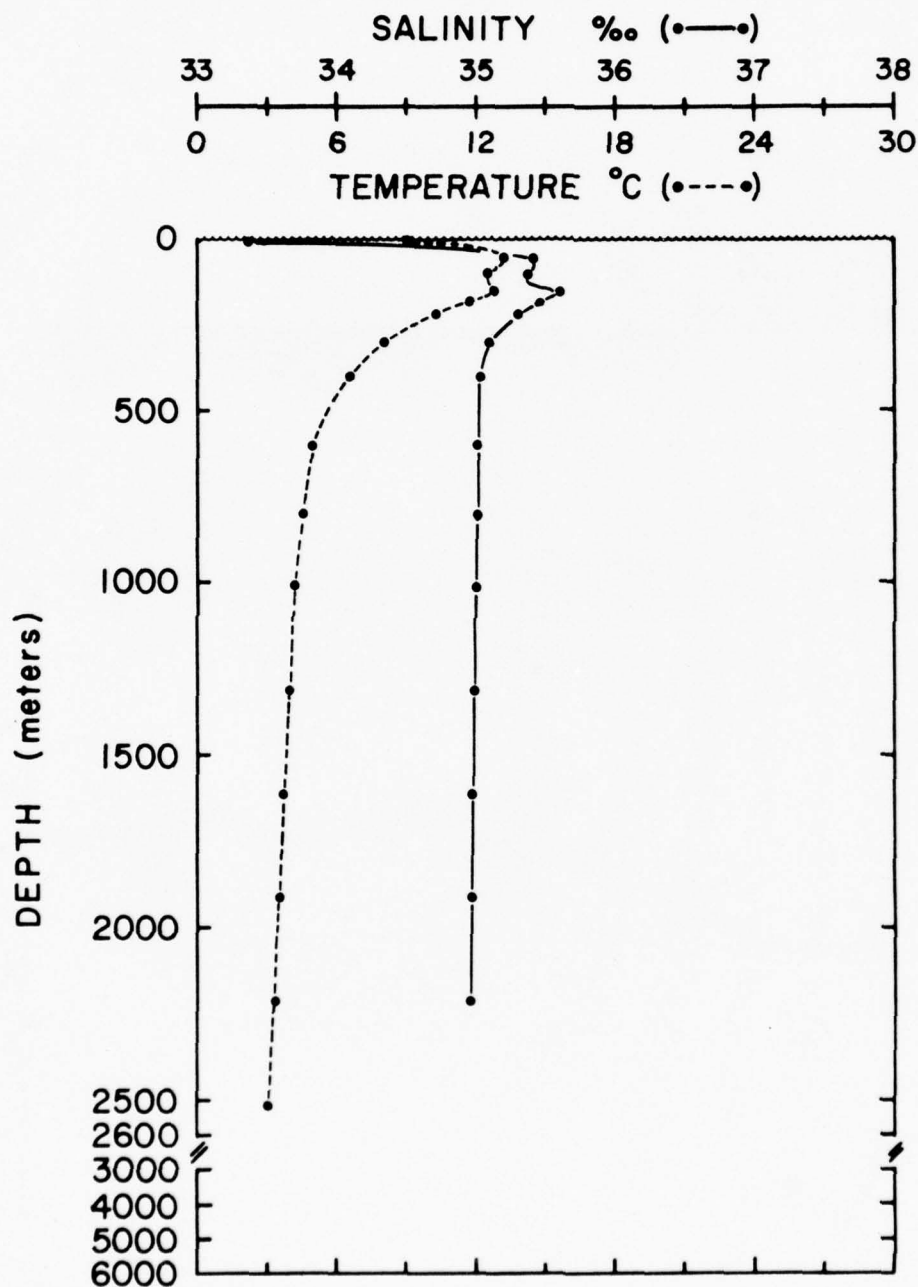


NORTH IS UP

3575F

MM/SEC  
0 100 200





KN - 020 - 070  
 LAT. 39° 06.8' N  
 LONG. 70° 00.4' W  
 DATE 71-05-9

MOORING NO. 358

Lat. 39° 07.4'N Long. 70° 03.0'W

Set December 11, 1970

Set by R. Heinmiller

Ship R. V. Knorr Cruise 17

Recovered April 27, 1971

Recovered by J. Gifford

Ship R. V. Knorr Cruise 20

Mooring type - Intermediate

Purpose of mooring

- A) Measurements at Site D
- B) Low frequency wave correlation across the Gulf Stream with mooring 357

RADIO FLOAT

10 m 9/16" NYLON WITH 5 GLASS BALLS

CURRENT METER - 3581

DEPTH RECORDER - 3582

454 m 3/8" DACRON

20 m 9/16" NYLON

INCLINOMETER - 3583

10 m 9/16" NYLON WITH 6 GLASS BALLS

CURRENT METER - 3584

450 m 3/8" DACRON

25 m 9/16" NYLON

10 m 9/16" NYLON WITH 5 GLASS BALLS

CURRENT METER - 3585

50 m 9/16" NYLON

CURRENT METER  
(DUMMY)

70 m 9/16" NYLON

10 m 9/16" NYLON WITH 7 GLASS BALLS

TENSIONMETER - 3586

ACOUSTIC RELEASE,  
TRANSPONDING

20 m 3/4" NYLON

10 m 1/2" CHAIN

STIMSON ANCHOR, 3000 LBS

Data No.	Instr. Type	Depth (m)
3581	Model 850	1466
3582	Depth Rec.	1467
3583	Incl.	1964
3584	Model 850	1976
3585*	Model 850	2495
3586	Tens.	2647
Water depth		2680

Comments

- 3581 - bit problems.
- 3584 - timing problems.

Data number 3585

Instrument No.: M-205

Type: Model 850

Depth: 2495 m

Water depth: 2680 m

Start time: 70-XII-12 03.30.37

Stop time: 71-IV-27 21.30.37

Duration: 136d 18h

Sampling scheme: Interval

time between strobes = 5.27 seconds

no. of strobes per interval = 16

interval time = 1800 seconds

COMMENTS:

Note: The rotor threshold speed for Model 850 instruments is 1.8 mm/sec.

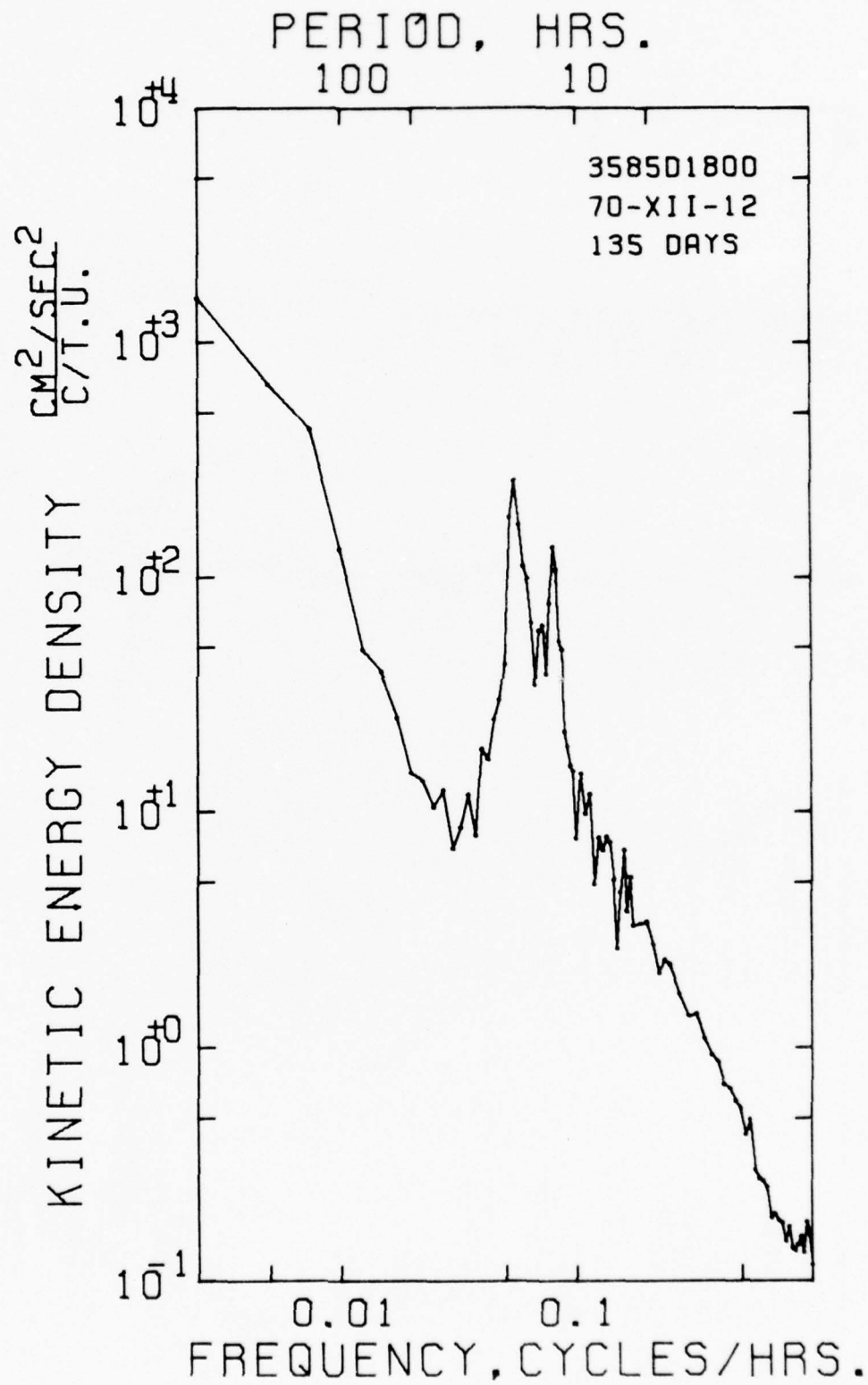
DATA/ 358501800

```
*****
VARIABLE *      EAST      NORTH      SPEED
UNITS    *      MM/SEC    MM/SEC    MM/SEC
*****
MEAN      *      -20.990    -2.230    49.005
STD. ERR. *          .490      .481      .417
VARIANCE  *      1578.132    1518.780    1141.021
STD. DEV. *          39.726    38.972    33.779
KURTOSIS  *          3.154      5.544      3.883
SKEWNESS  *          -.166      -.546      1.114
MINIMUM   *      -163.826    -195.056    11.000
MAXIMUM   *          108.895    131.078    197.000
```

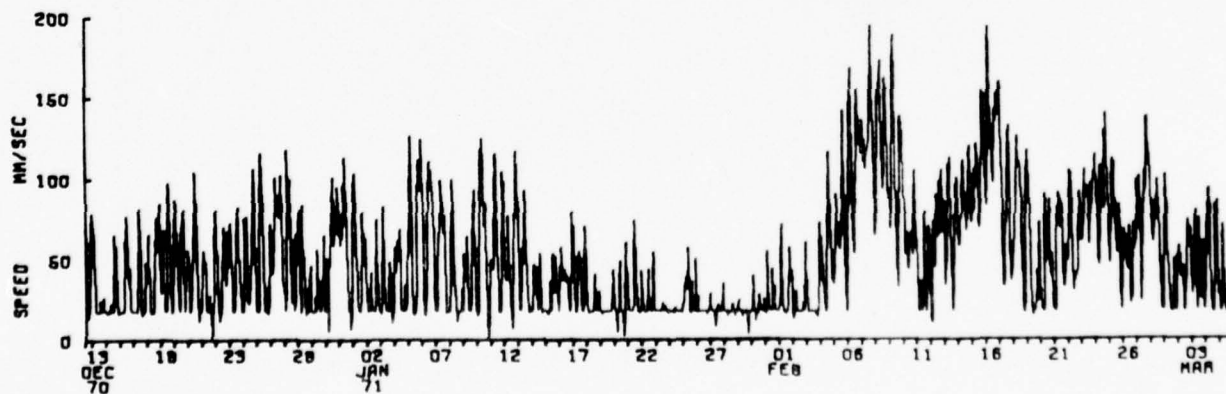
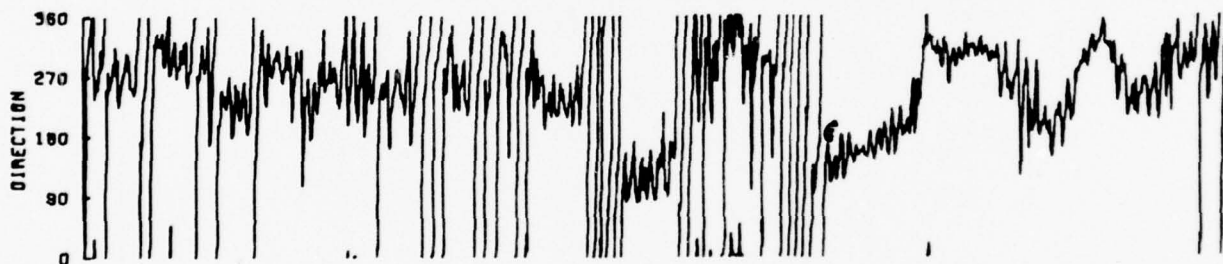
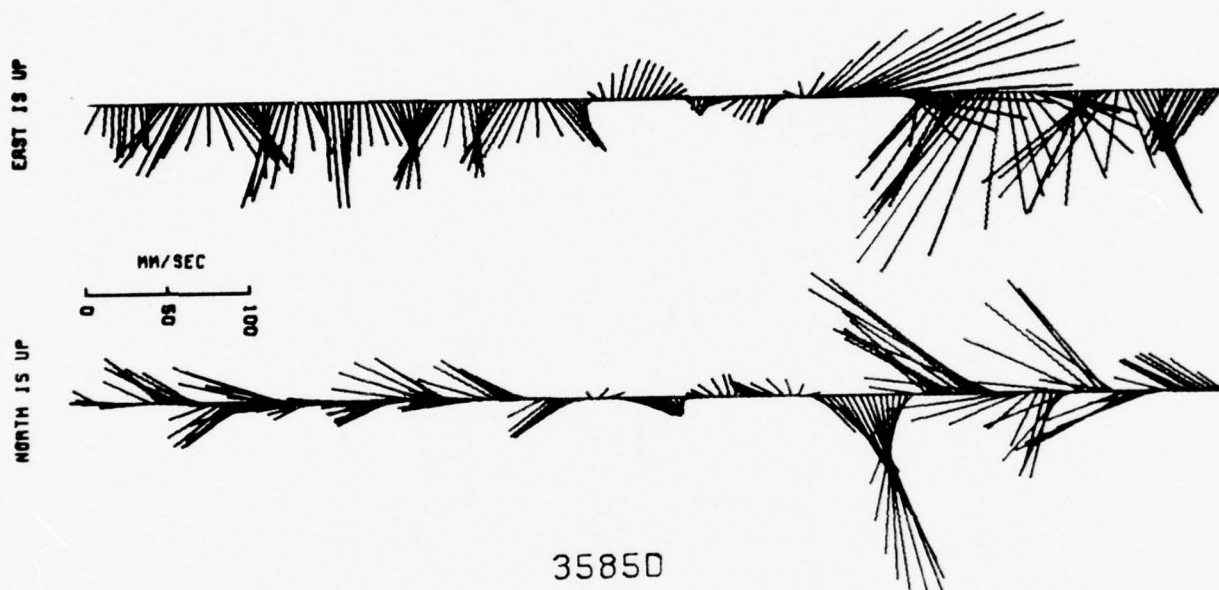
\*\*\*\*\*
EAST & NORTH

```
*****
COVARIANCE *      -490.462
STD. ERR. OF COVARIANCE *      26.288
STD. DEV. OF COVARIANCE *      2129.978
CORRELATION COEFFICIENT *      -.317
VECTOR MEAN *      21.108
VECTOR VARIANCE *      1548.456
VECTOR STD. DEV. *      39.350
```

```
*****
* SAMPLE SIZE = 6565 POINTS
*
* SPANNING RANGE
* FROM 70- XII-12 03.30.37
* TO 71- IV -27 21.30.37
*
* DURATION 136.75 DAYS
```



13 DEC 70 18 23 28 02 JAN 71 07 12 17 22 27 01 FEB 06 11 16 21 26 03 MAR





08 13 18 23 28 02 07 12 17 22 27  
APR

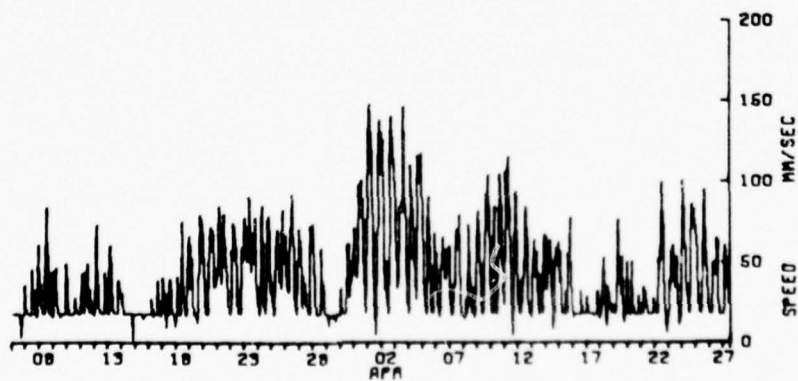
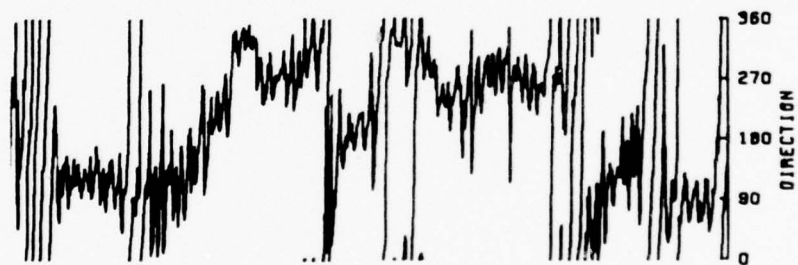


MM/SEC

0 50 100

NORTH IS UP

35850



MOORING NO. 360

Lat. 36° 23.0'N Long. 71° 15.0'W

Set December 13, 1970

Set by R. Heinmiller

Ship R. V. Knorr Cruise 17

Recovered May 3, 1971

Recovered by J. Gifford

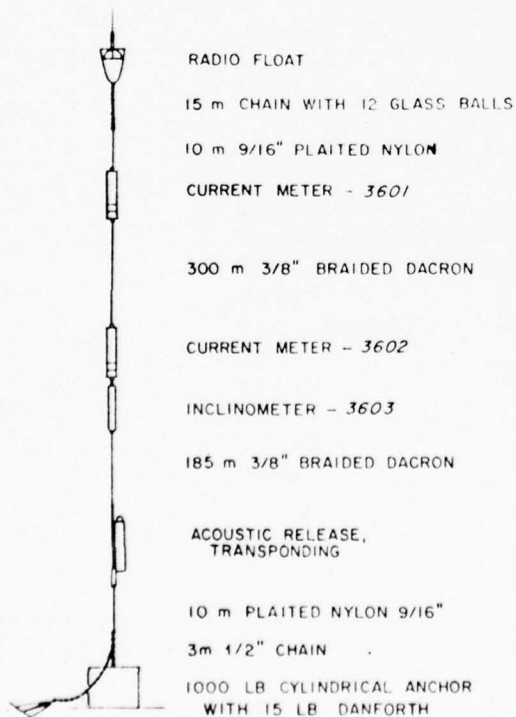
Ship R. V. Knorr Cruise 20

Mooring type - Bottom

Purpose of mooring

Measurements under the Gulf Stream  
with moorings 364 and 368

Data No.	Instr. Type	Depth (m)
3601*	Model 850	3697
3602*	Model 850	4019
3603	Incl.	4020
Water depth		4230



#### Comments

Data from this area were used  
in Luyten, 1977.

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Data number 3601

Instrument No.: M-191

Type: Model 850

Depth: 3697 m

Water depth: 4230 m

Start time: 70-XII-13 11.30.37

Stop time: 71-II-19 19.00.37

Duration: 68d 7h 30m

Sampling scheme: Interval

time between strobes = 5.27 seconds

no. of strobes per interval = 16

interval time = 1800 seconds

COMMENTS:

The STATS and spectral displays use a start time of January 1, 1971 instead of December 13, 1970 (See Speed vs Time plot).

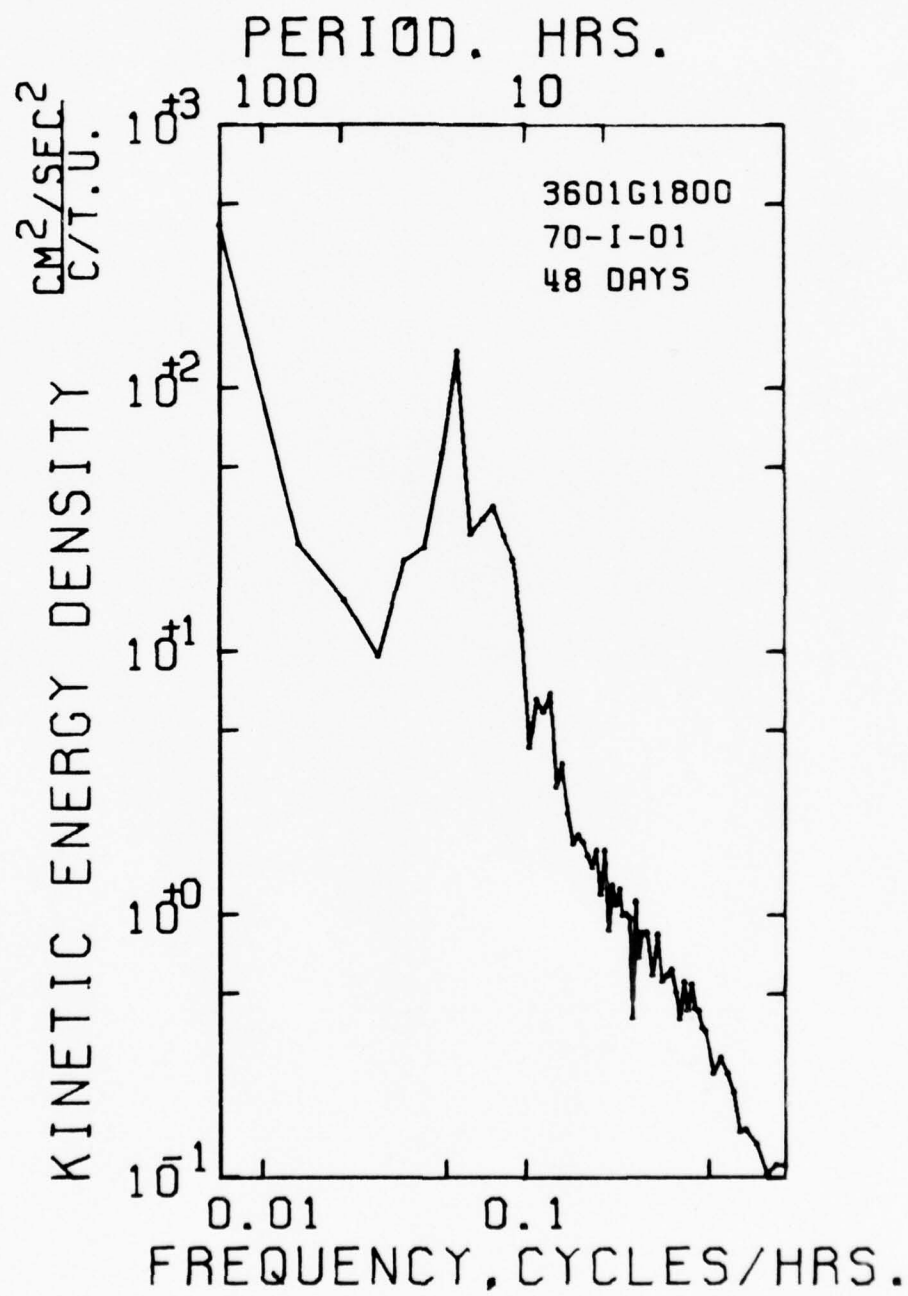
DATA/ 3601 31000

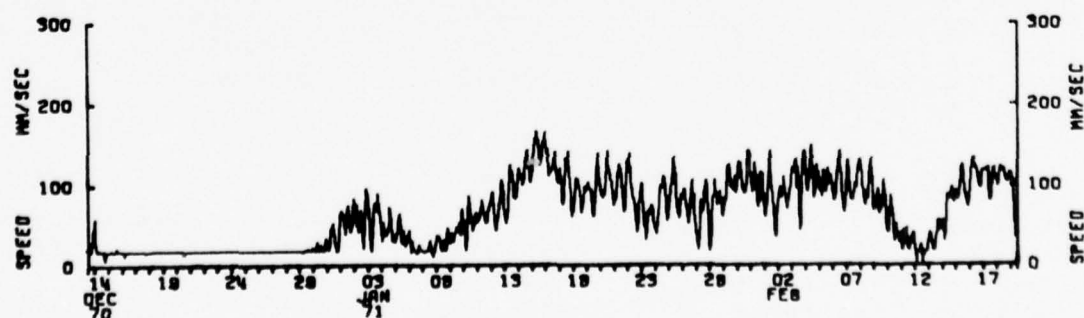
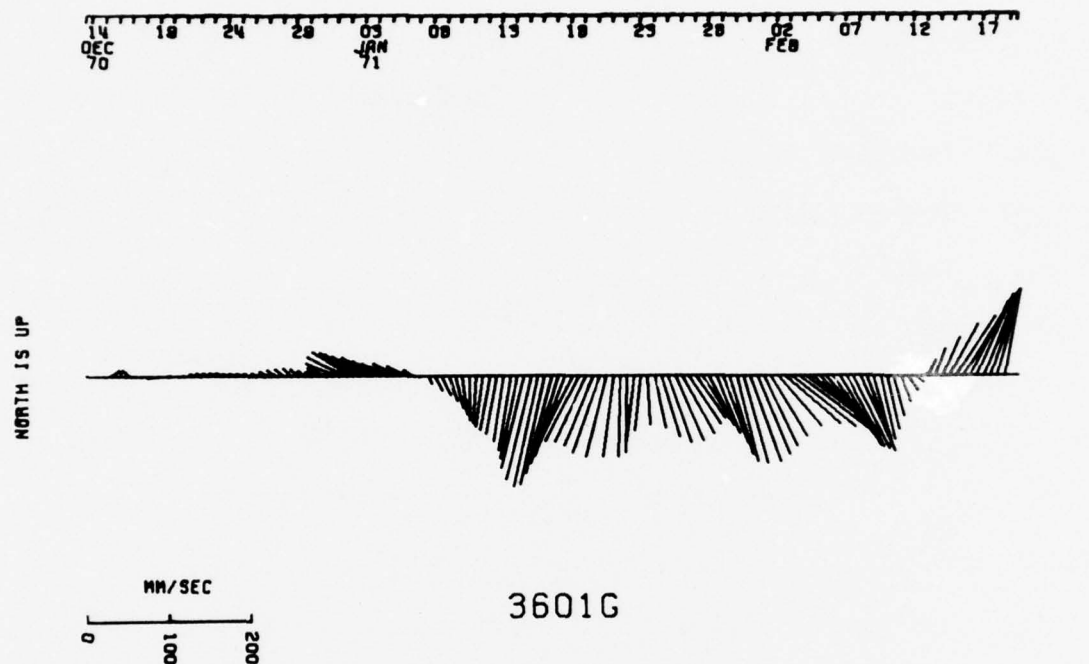
```
*****
VARIABLE *      EAST      NORTH      SPEED
UNITS    *      MM/SEC    MM/SEC    MM/SEC
*****
MEAN      =      9.418      -41.255      81.582
STD. ERR. =      .822      1.368      .716
VARIANCE  =    1615.084    4477.204    1227.316
STD. DEV. =      40.188      66.912      35.033
KURTOSIS  =      2.534      2.708      2.168
SKEWNESS  =      .843E-1      .752      -.143
MINIMUM   =    -92.406    -171.070    17.957
MAXIMUM   =    127.848     128.723    173.994
*****
```

\*\*\*\*\*
EAST & NORTH
\*\*\*\*\*

```
COVARIANCE      *      26.749
STD. ERR. OF COVARIANCE *      66.142
STD. DEV. OF COVARIANCE *    3234.186
CORRELATION COEFFICIENT *      .995E-2
VECTR MEAN      *      42.317
VECTR VARIANCE   *    3046.144
VECTR STD. DEV.  *      55.192
```

```
*****
* SAMPLE SIZE = 2391 POINTS
*
* SPANNING RANGE
* FROM 71- I -01 00.00.37
* TO 71- II -19 19.00.37
*
* DURATION 49.79 DAYS
*****
```





Data number 3602

Instrument No.: M-203

Type: Model 850

Depth: 4019 m

Water depth: 4230 m

Start time: 70-XII-13 10.30.37

Stop time: 71-V-03 10.30.37

Duration: 141d

Sampling scheme: Interval

time between strobes = 5.27 seconds

no. of strobes per interval = 16

interval time = 1800 seconds

COMMENTS:

DATA/ 360201800

```
*****
VARIABLE *      EAST      NORTH      SPEED
UNITS    *      MM/SEC    MM/SEC    MM/SEC
*****
MEAN      =      17.315      -31.163      80.992
STD. ERR. =      .618      .821      .524
VARIANCE  =    2588.211    4560.395    1859.864
STD. DEV. =      50.874      67.531      43.126
KURTOSIS  =      2.367      3.842      2.417
SKEWNESS  =      .217      .886      .314
MINIMUM   =    -121.254    -169.149    18.000
MAXIMUM   =     151.818     222.565    226.000
```

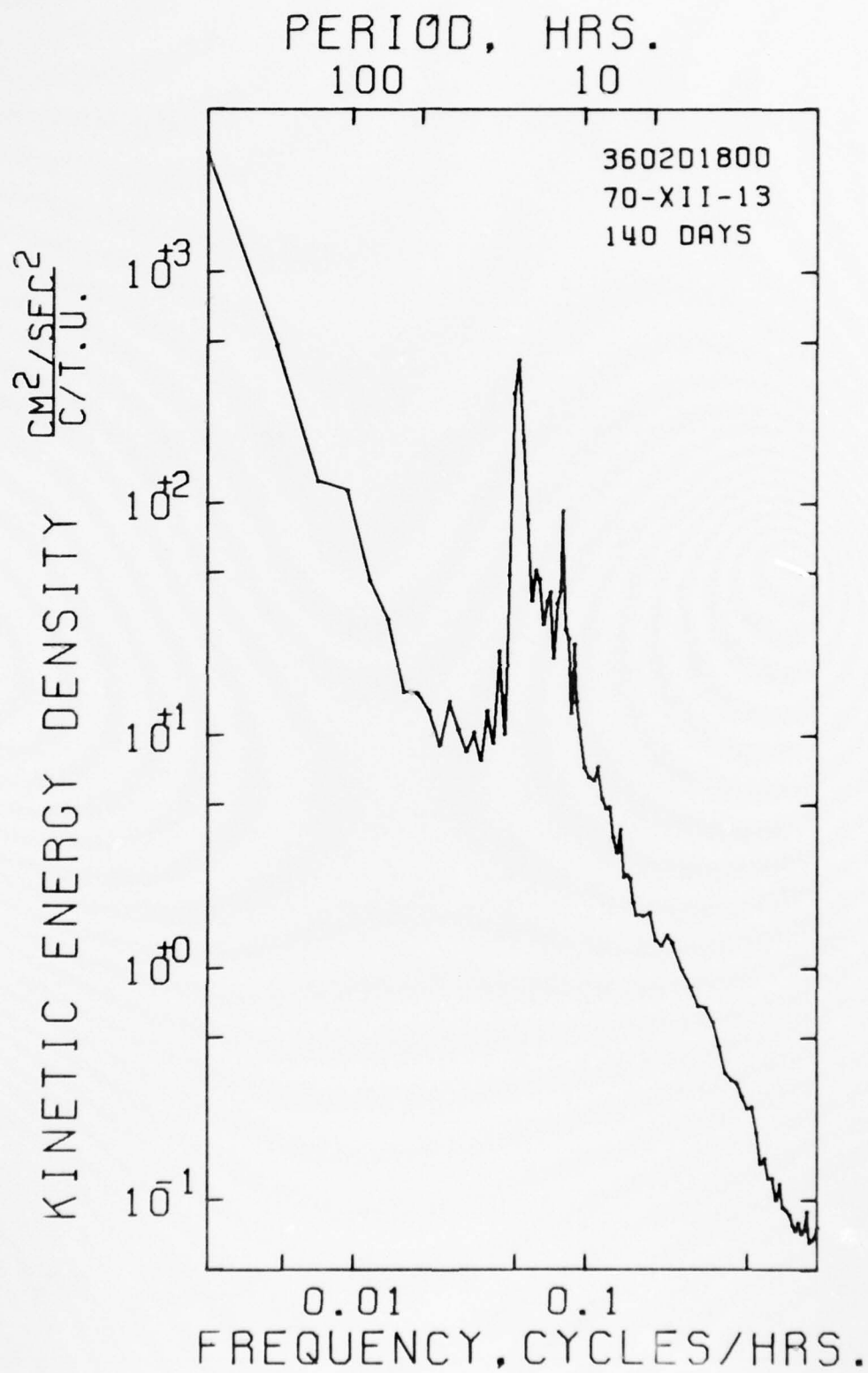
\*\*\*\*\*
EAST & NORTH
\*\*\*\*\*

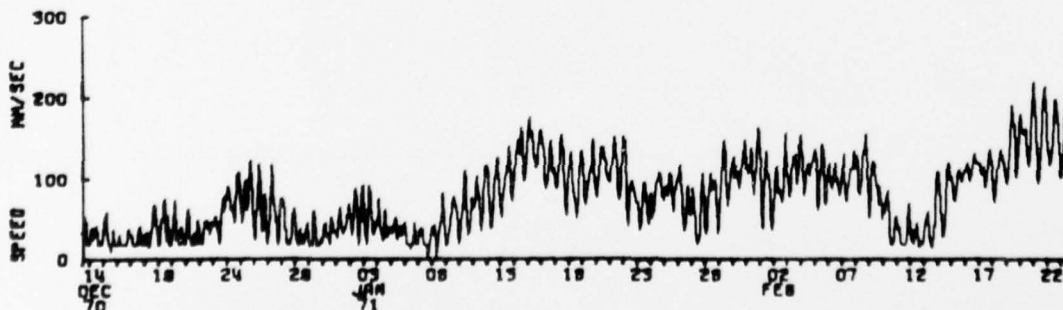
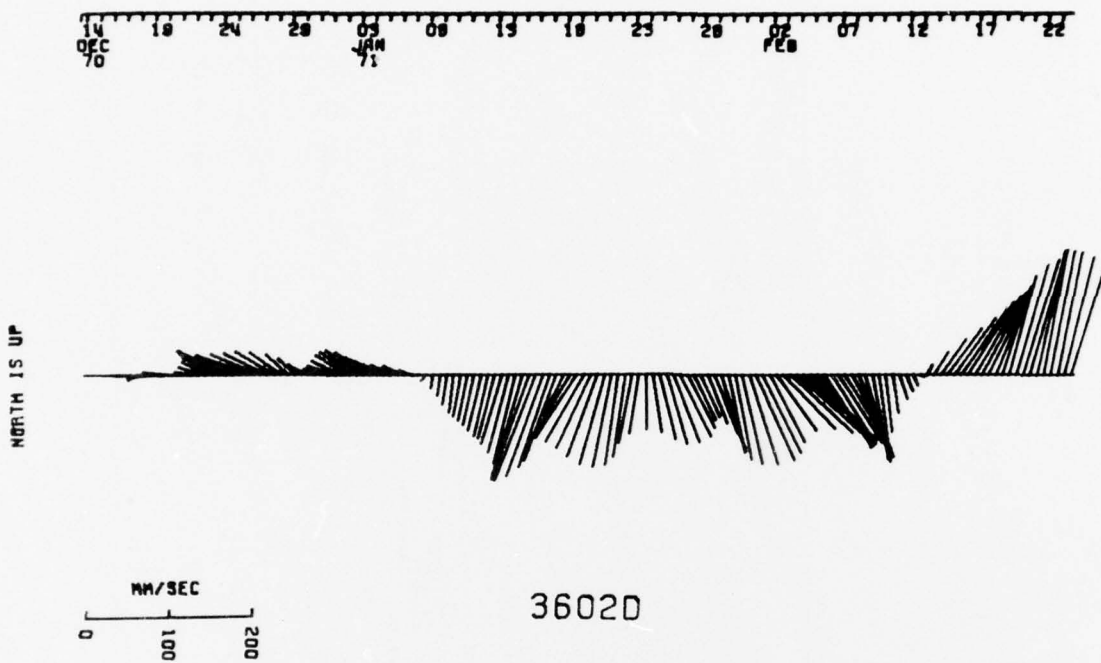
```
COVARIANCE      =
STD. ERR. OF COVARIANCE      =
STD. DEV. OF COVARIANCE      =
CORRELATION COEFFICIENT      =
VECTOR MEAN      =
VECTOR VARIANCE   =
VECTOR STD. DEV.  =
```

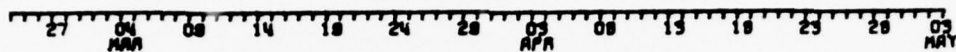
```
-240.964
51.261
4217.426
-.701E-1
35.650
3574.303
59.785
```

```
*****
* SAMPLE SIZE = 6769 POINTS
*
* SPANNING RANGE
* FROM 70- XII-13 10.30.37
* TO 71- V -03 10.30.37
*
* DURATION 141.00 DAYS
```



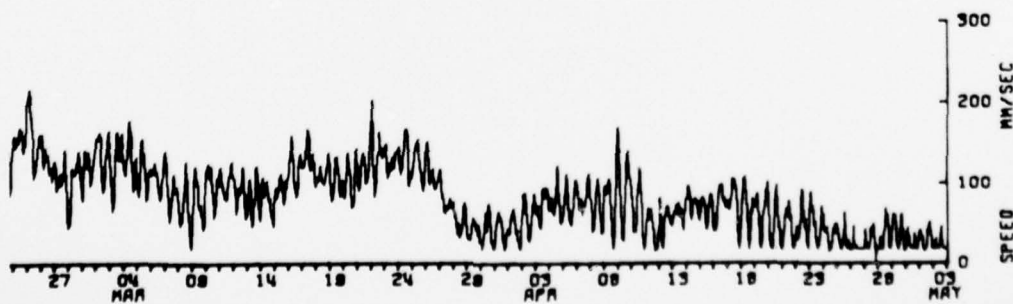
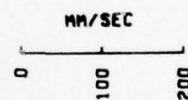






NORTH IS UP

36020



Lat. 36° 57.5'N Long. 67° 53.2'W

Set by R. Heinmiller

Recovered May 7, 1971

Recovered by J. Gifford

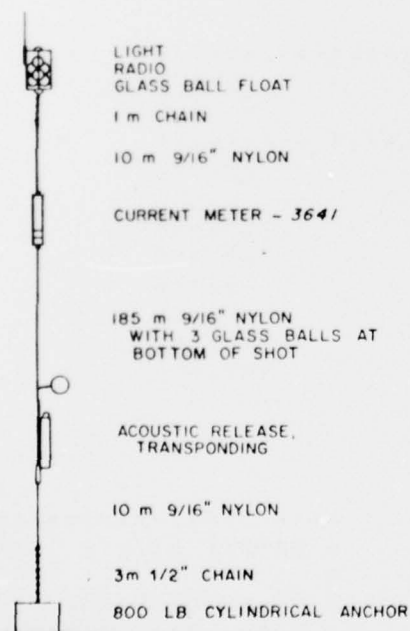
Ship R. V. Knorr Cruise 20

Mooring type - Bottom

### Purpose of mooring

Measurements under the Gulf Stream  
with moorings 360 and 368

<u>Data No.</u>	<u>Instr. Type</u>	<u>Depth (m)</u>
3641*	Model 850	4712
Water depth		4915



### Comments

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Data number 3641

Instrument No.: M-249

Type: Model 850

Depth: 4712 m

Water depth: 4915 m

Start time: 70-XII-15 06.00.36

Stop time: 71-V-07 20.00.36

Duration: 143 d 14h

Sampling scheme: Interval

time between strobes = 5.27 seconds

no. of strobes per interval = 15

interval time = 1800 seconds

COMMENTS:

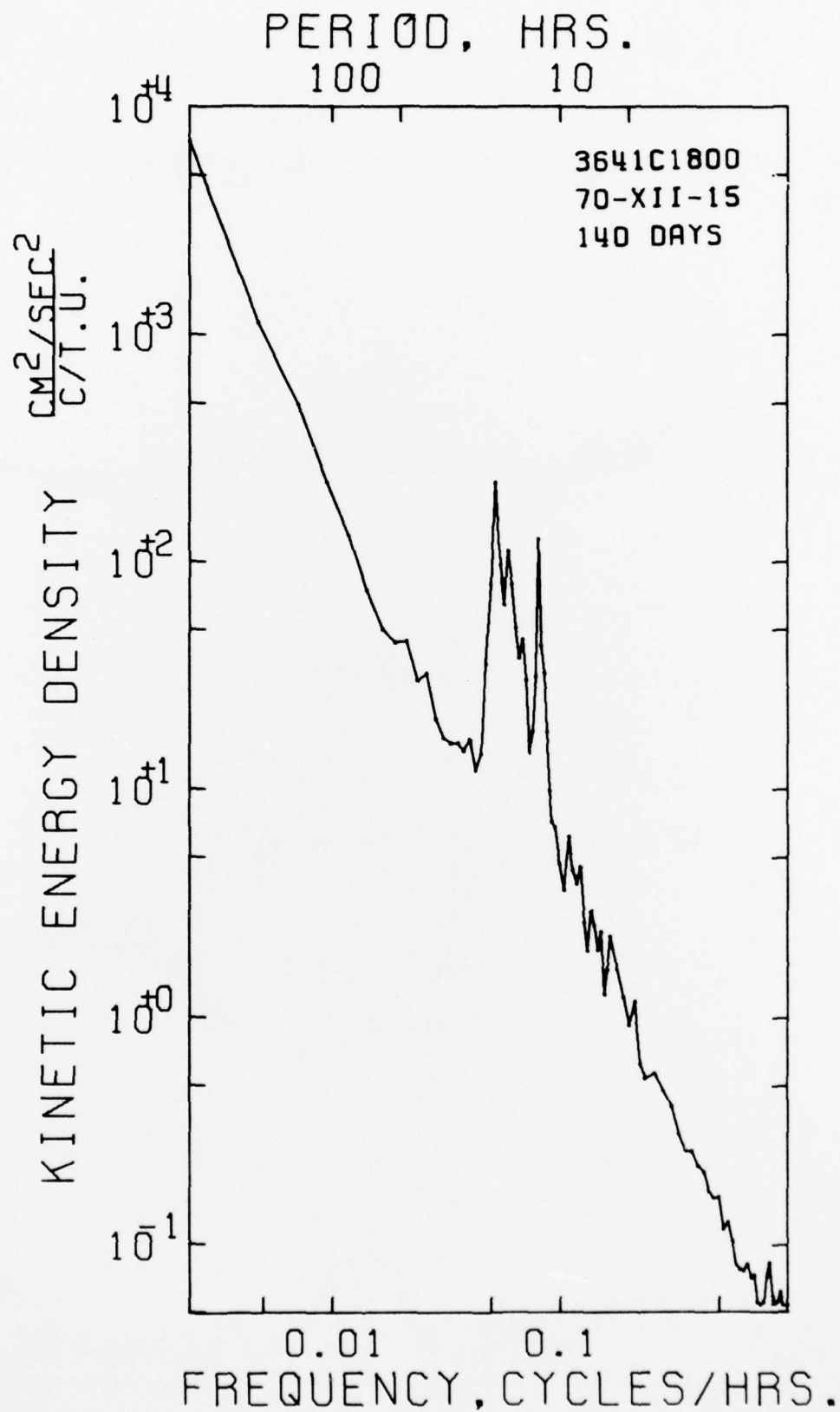
DATA/ 3641C1800

```
*****
VARIABLE *      EAST      NORTH      SPEED
UNITS    *      MM/SEC    MM/SEC      MM/SEC
*****
MEAN      *      -21.804    31.093    23.378
STD. ERR. *          .690     .805     .570
VARIANCE  *    3278.817    4470.019    2239.098
STD. DEV. *      57.261    66.858    47.319
KURTOSIS  *      3.864     3.017     3.048
SKEWNESS  *          .398     .181     .744
MINIMUM   *    -212.830    -218.716    17.000
MAXIMUM   *     209.705     249.298    257.000
```

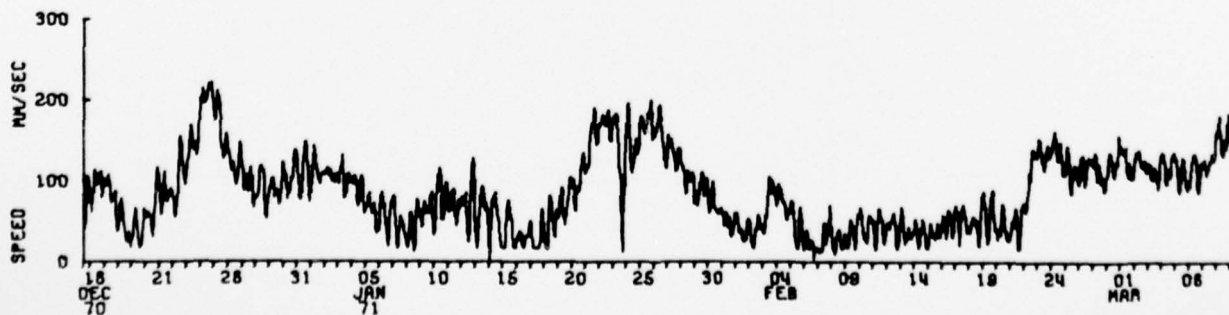
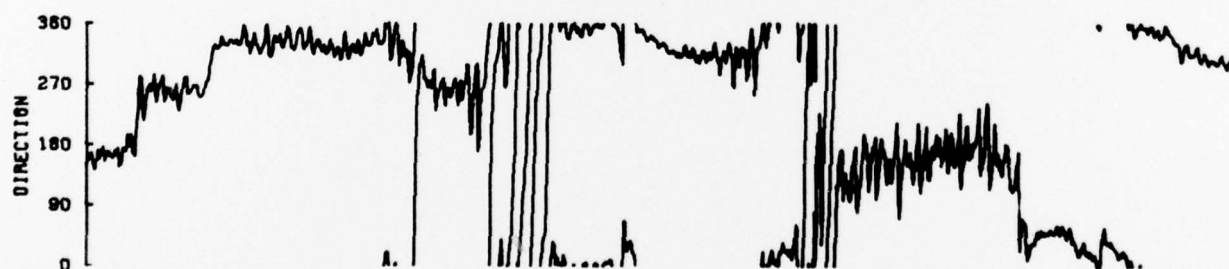
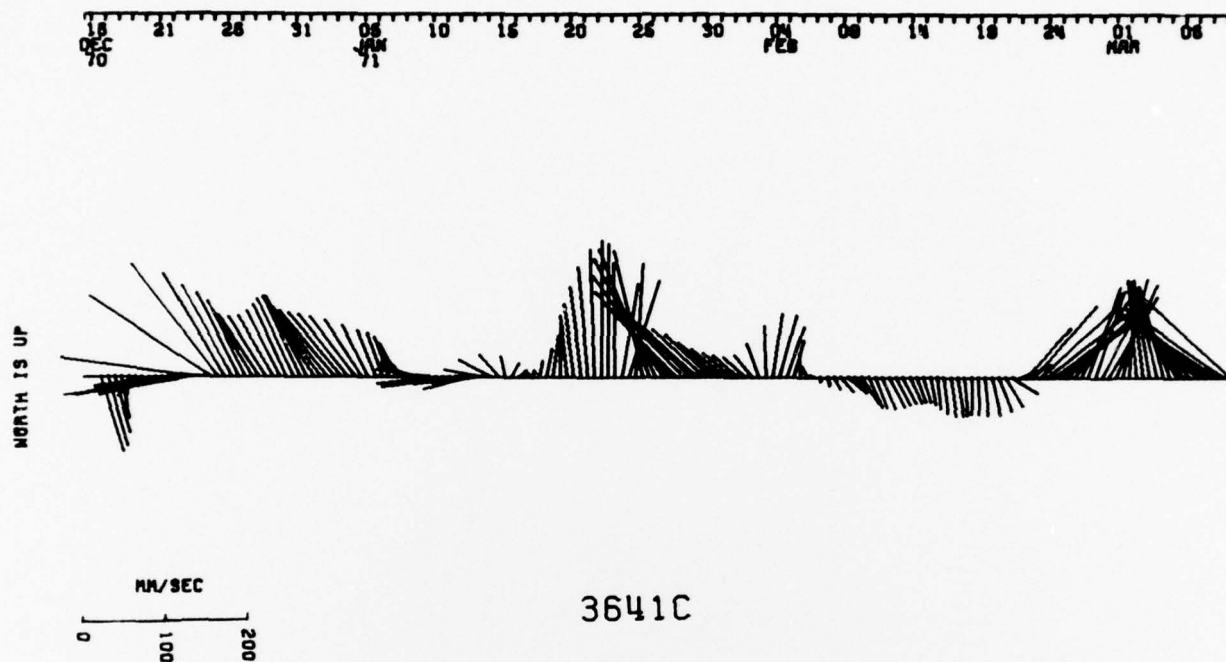
\*\*\*\*\*
EAST & NORTH
\*\*\*\*\*

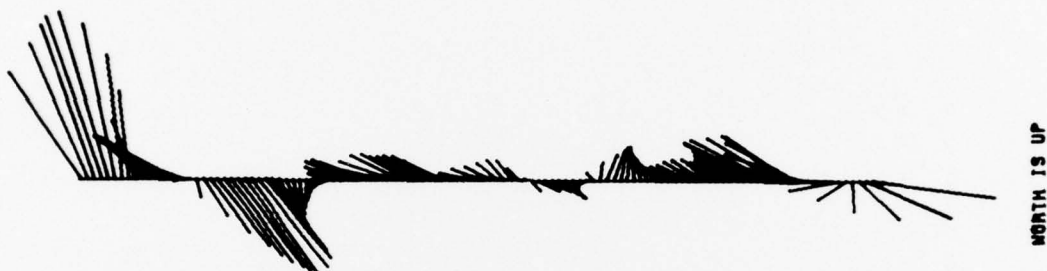
```
CovARIANCE *    -1013.395
STD. ERR.  *      53.259
STD. DEV.  *    4421.774
CORRELATION *      -.265
VECTOR MEAN *      37.977
VECTOR VARIANCE *    3874.418
VECTOR STD. DEV. *      62.245
```

```
*****
* SAMPLE SIZE = 6893 POINTS
*
* SPANNING RANGE
* FROM 70- XII-15 06.00.36
* TO 71- V-07 20.00.36
*
* DURATION 143.58 DAYS
```

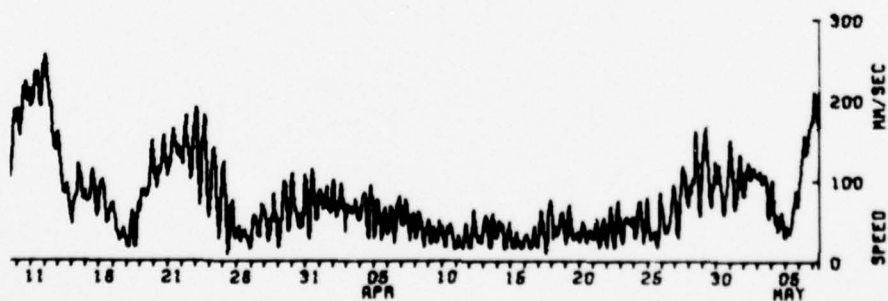
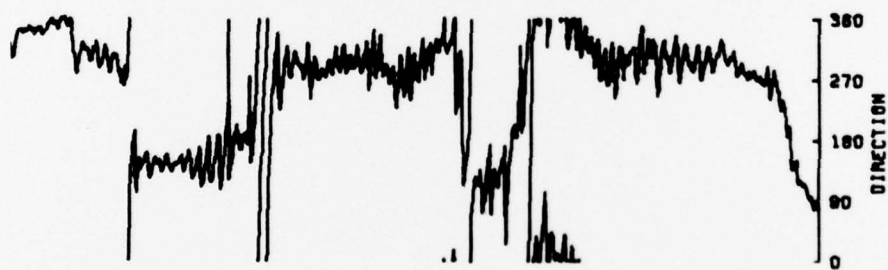
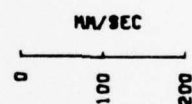








3641C



MOORING NO. 368  
Lat. 37° 57.6'N Long. 69° 27.5'W

Set December 16, 1970

Set by R. Heinmiller

Ship R. V. Knorr Cruise 17

Recovered May 8, 1971

Recovered by J. Gifford

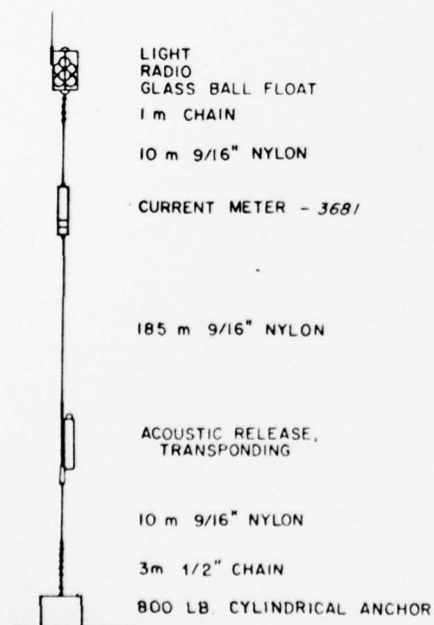
Ship R. V. Knorr Cruise 20

Mooring type - Bottom

Purpose of mooring

Measurements under the Gulf Stream  
with moorings 360 and 364

<u>Data</u> <u>No.</u>	<u>Instr.</u> <u>Type</u>	<u>Depth</u> <u>(m)</u>
3681*	Model 850	3750
Water depth		3955



Comments

Data number 3681

Instrument No.: M-127

Type: Model 850

Depth: 3750 m

Water depth: 3955 m

Start time: 70-XII-16 20.30.37

Stop time: 71-V-08 12.30.37

Duration: 142d 16h

Sampling scheme: Interval

time between strobes = 5.27 seconds

no. of strobes per interval = 16

interval time = 1800 seconds

COMMENTS:

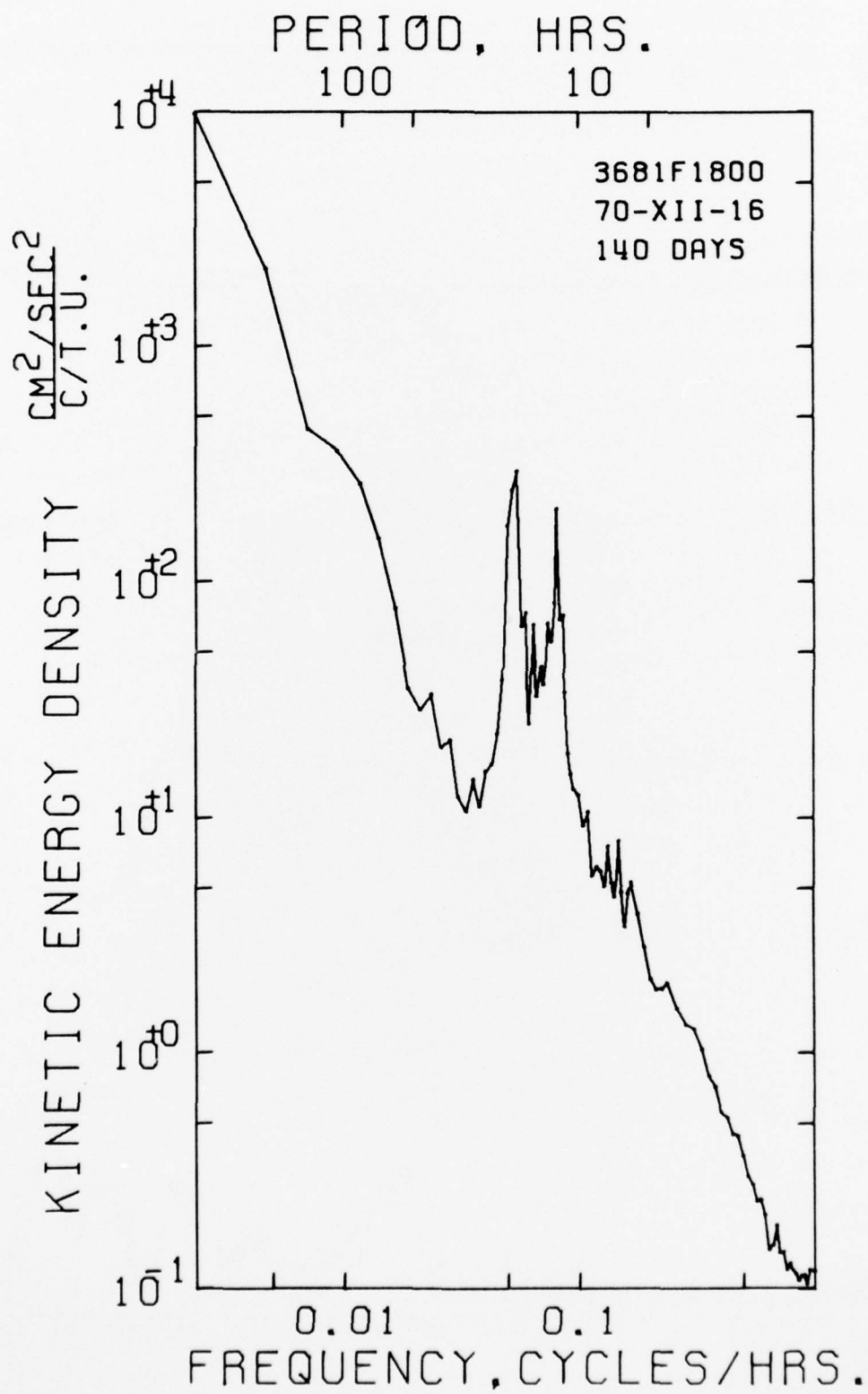
DATA/ 3681F1800

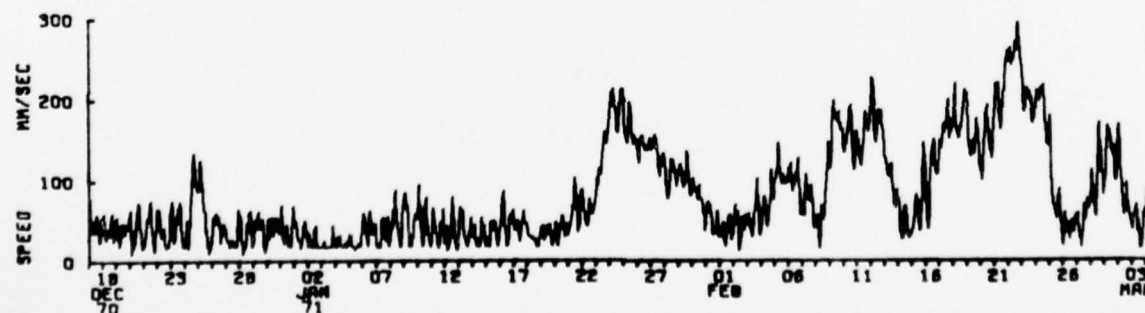
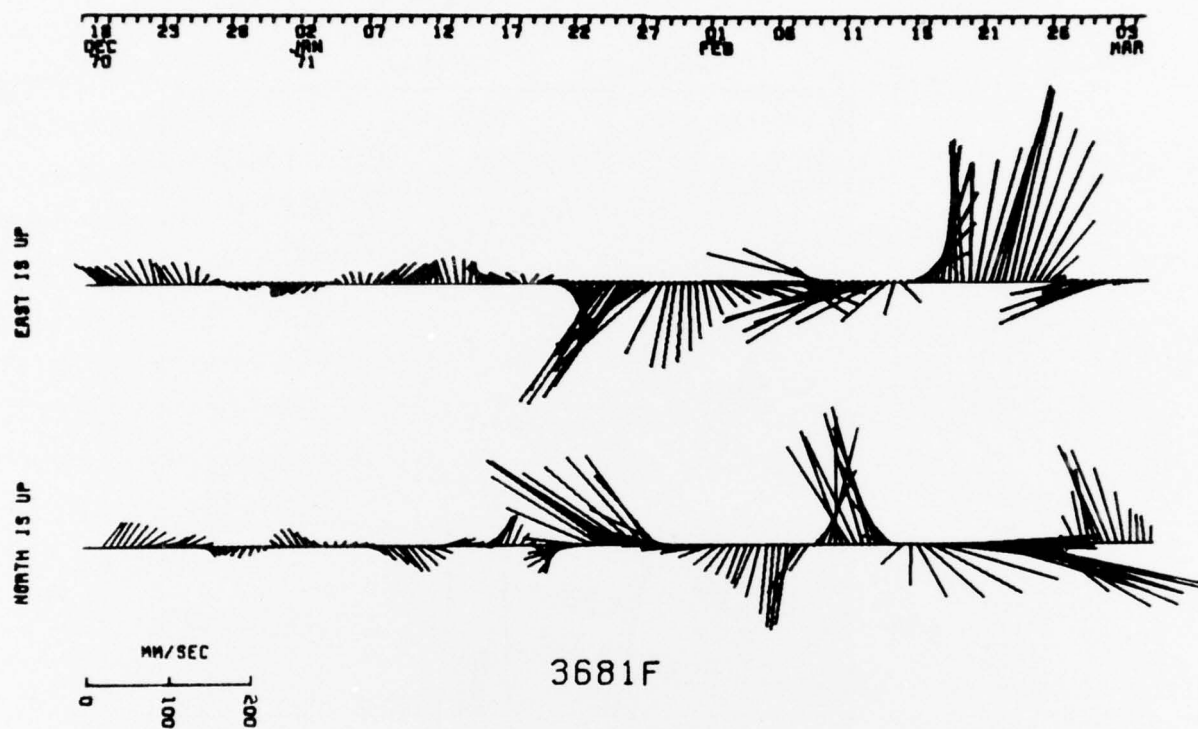
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VARIABLE *      EAST      NORTH      SPEED
UNITS    *      MM/SEC    MM/SEC    MM/SEC
*****
MEAN      *      -6.872      8.880      86.029
STD. ERR. *      .965      .766      .675
VARIANCE  *      6383.652    4014.965    3123.719
STD. DEV. *      79.898      63.364      55.890
KURTOSIS  *      3.793      3.561      3.383
SKEWNESS  *      .351      .718      .963
MINIMUM   *      -259.866    -150.060     16.000
MAXIMUM   *      297.560      240.835     299.000
```

\*\*\*\*\*
EAST & NORTH
\*\*\*\*\*

```
COVARIANCE      *      -1906.723
STD. ERR. OF COVARIANCE *      65.807
STD. DEV. OF COVARIANCE *      5446.118
CORRELATION COEFFICIENT *      -.377
VECTOR MEAN      *      11.228
VECTOR VARIANCE   *      5199.308
VECTOR STD. DEV.  *      72.106
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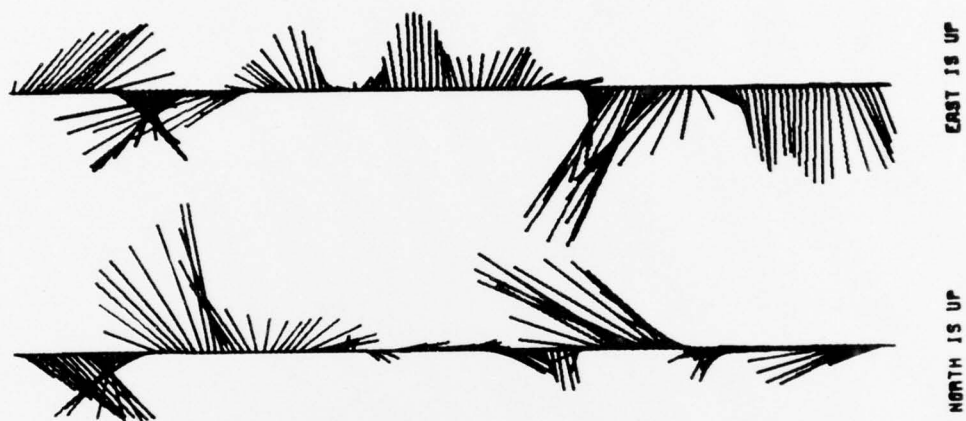
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*****
* SAMPLE SIZE = 6849 POINTS
*
* SPANNING RANGE
* FROM 70- XII-16 20.30.37
* TO 71- V -08 12.30.37
*
* DURATION 142.67 DAYS
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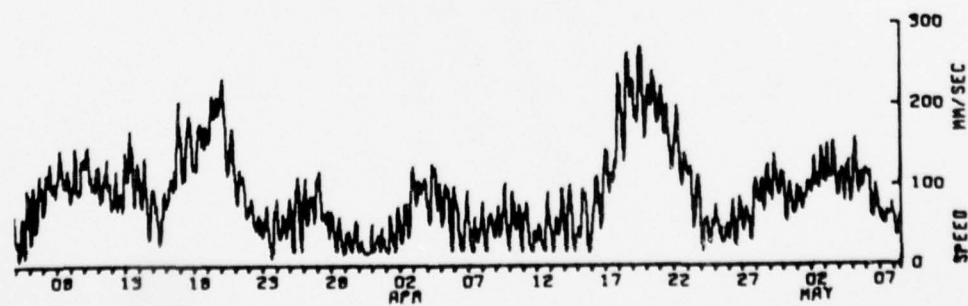
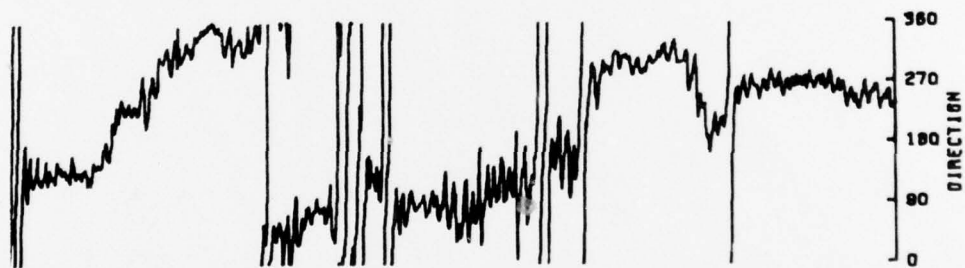


08 13 18 23 28 02 APR 07 12 17 22 27 02 MAY 07



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